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Problems of economic growth in New Zealand.

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PROBLEMS OF ECONOMIC GROWTH IN NEW ZEALAND

by

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INTRODUCTION

The current economic discussion is centered on economic development and growth. The necessity to improve existing standards of living is most urgently felt in the underdeveloped countries, especially since they have become conscious of their low economic levels. But also rich and developed countries demonstrate a very high degree of preoccupation with economic growth. Their modern welfare economies have geared their stability and full employment policies to constantly rising levels of investment, production and well-being. The principal objectives of economic policy in most advanced countries seem to be the achievement of:

a) a satisfactory rate of economic growth,

b) full employment,

c) stable prices,

d) balance of payments equilibrium, and

e) an equitable distribution of income.

There is thus a considerable and growing unity of basic ideas and ideals involved in the concept of economic development and growth throughout the world.

The consensus to develop and grow, however, involves a conflict of interests. This is so because economic development and growth necessitates planning, and planning is national. It may take the form of coercion and direct controls of every aspect of economic life, or it may manifest itself in suggested guidelines and targets set in voluntary cooperation and consultation between the government and the private sector of the economy.

In every case there is a manifestation of the nation-state which tends to become stronger and weaken the international economic cooperation. It was the revival of nationalism and the struggle for independence which destroyed the closely-knit world community as it existed before the outbreak of World War I. The process of international economic disintegration has continued ever since, culminating in the two World Wars and the Great Depression in the thirties. Comprehensive plans, especially after World War II, were made for organized and concerted international economic efforts toward economic integration on a world scale but the tendency of international economic disintegration has not been fully reversed. Plans to liberalize international trade, to create international guarantees for stabilization of general business conditions, to create a new international monetary system, to make all currencies convertible, to reestablish an efficient capital market and many others have not come into fulfillment.

The effort continues. In the framework of this imperfect, conflicting and ever changing world the problems of poor and backward economies have attracted most of the attention. United Nations have declared the 1960s a development decade with a major objective of a 5 per cent average annual rate of growth in the incomes of the underdeveloped countries by 1970. But there is also a group of countries which, by international standards, are relatively well off, but whose economies are extremely vulnerable to external influences mainly because of their dependence upon narrow range of primary exports and because they are in the early stages of industrialization and suffering from the cost disadvantage of producing for a small

domestic market. These countries stand in the mid-stream between the "haves" and the "have-nots". They share with the underdeveloped countries common problems of economic growth and industrialization. Their susceptibility to overseas economic fluctuations makes the solution of the problem of maintaining or raising living standards in face of an expanding population both difficult and urgent.

New Zeland is a typical representative of this group. It ranks high in terms of material standard of living, of literacy and educational facilities while heavily dependent upon exports of pastoral type for the bulk of foreign exchange. Economic growth in New Zealand is closely tied to international trade and external conditions which she can neither control nor influence. There is a lack of an adequate domestic natural resource base, the limitations of a small internal market and constant need for the infusion of foreign capital. Industrialization and product diversification in response to the changing configuration of world trade are therefore very difficult.

The present thesis will maintain that New Zealand is facing serious economic problems of transformation and adjustment in response to changes in the world trade and political power and that to solve these problems successfully it is necessary to strengthen the elements of free competition and resource allocation, to maintain and increase the flow of autonomous investment, to widen the scope of economic planning and to make government fiscal and monetary policies more flexible and efficient.

In terms of exposition and logic the following scheme is adopted:

There will be first, a general description of the characteristics of the New Zealand economy. These will include the country's resource base, the development and nature of agriculture and manufacturing industries, and New Zealand's dependence on external trade, especially on the markets in the United Kingdom.[1] The presentation of the characteristics of the New Zealand economy will be attempted so as to reveal and explain the basic limitations and obstacles in the way of continuous economic growth which the country is presently facing.

Secondly, the changing pattern of world trade and political power structure will be examined, indicating the necessity for the New Zealand economy to transform by adopting the structure of foreign trade and internal economy to a new situation in an economic manner. Some of the obstacles inherent in the nature of the economy will be pointed out.

Thirdly, an investigation will be made as to the ability of the economy to transform in a stable and orderly manner, while maintaining a satisfactory rate of aggregate income growth, full employment and other economic objectives. This will be done by means of a simple econometric model using national income accounts data. Based on a recent sample period of 12 years the model will determine the equilibrium rate of aggregate income growth and indicate its stability by revealing the consequences of the impacts of exogenous disturbances upon the equilibrium rate of growth. Furthermore, the model will enable one to analyze factors that contribute to the growth and stability of aggregate income.

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[1] United Kingdom, Britain, England will be used as synonyms throughout the text.

Fourthly and finally, based upon the general characteristics of the New Zealand economy and its structural parameters, a strategy of economic development will be proposed.

NEW ZEALAND IN THE WORLD COMMUNITY

The New Zealand Economy

Some of the basic characteristics of the New Zealand economy are reflected by the data presented in Table 1. Information in Table 2 attempts to indicate the standard of living in New Zealand in an international context.

The more detailed information on the various sectors, activities and resources in the following pages is intended as a background for better understanding the problems of New Zealand's economic growth and stability in a changing world environment. Unless indicated otherwise, all data will be from the The New Zealand Official Yearbook, 1968 (1).

Population

New Zealand's population at the end of 1966 was estimated at 2,712,251, including 206,054 Maoris. In the decade between 1956 and 1966 the average annual rate of its growth amounted to 2.1 per cent. Approximately three-quarters of this increase was the result of natural increase and one-quarter was attributable to immigration. Admission of immigrants is restricted and controlled by the government.

Land

Three-quarters of the country is 650 feet or more above the sea level and although there are several lowland areas, most of the country is rolling and hilly with a chain of high and rugged mountains down the center of the

Table 1. Basic data[a]

Population - March, 1967		2.73 million
Estimated annual growth rate, 1961/66		1.8%
Gross National Product - March, 1966/67		NZ$ 3,937 million
Per capita		NZ$ 1,442
Annual real growth rate:		
1954/55-1966/67		4.3%
1960/61-1966/67		4.8%
1965/66-1966/67		4.5%
Sector origin of GDP at factor cost		
March 1964/65		
Agriculture, forestry, fishing		17%
Manufacturing, mining, power		42%
Construction		5%
All services		35%

Percentage of GDP at current prices	March	
	1965/66	1960/61-1965/66
Private consumption	63	63
Public consumption	13	13
Gross investment	27	25
Gross domestic savings	22	22
Exports, f.o.b.	20	21
Imports, f.o.b.	19	19
Government taxation revenue	24	24
Social security benefits and pensions	6.5	7.3

Price increases, 1960-1966 — 2.7% p.a.

External trade	1966/67 NZ$ million	1961/62-1966/67 Average rate of change	1965/66-1966/67 Average rate of change
Exports, f.o.b.	725.5	4.5%	-5.0%
of which			
Wool (24%)	173.9	-3.5%	-25.0%
Meat (28%)	214.7	7.9%	4.1%
Dairy products (28%)	215.0	7.0%	4.9%
Imports, c.d.v.	721.5	7.3%	-1.0%

[a] Source: (2, 3).

Table 1. (Continued)

Balance of payments	March 1966/67 (NZ$ million)
Exports, f.o.b.	781.9
Imports, f.o.b.	-719.4
Net invisibles	-232.4
Balance on current account	-169.9
International reserve position	
As percentage of imports, June 1966/67	25%
IMF position, Oct. 30, 1967 (US$ million)	
Quota	157
Drawings of which	144
Compensatory drawings	29
Gross fund position	81
Credit tranche - standby	42
Credit tranche - other	39
External public debt	June 30, 1967 (US$ million)
Total debt outstanding	675.8
Net of undisbursed	633.0
Debt service ratio, 1965/66 (service payments as a percentage of goods and services)	5-6%

two islands. Two-thirds of the total land surface is actual or potential farm land. Nearly one-half of this is sown to pastures or cultivated, the rest being native grasses, bush scrub or barren land. One-third of New Zealand is occupied by national parks, state forest, water surfaces, mountains, roads and cities. This proportion is unlikely to be altered in any notable extent. Detailed break-down of land utilization is presented in Table 3.

Table 2. Indicators of living standards, 1965[a]

Food consumption (grams per head per day)	New Zealand	USA	UK
Meat	304	273	203
Cereals	236	182	213
Vegetables	234	268	162
Fruit	195	225	156
Fats and oils	55	60	62
Housing			
percentage of dwellings with			
Piped water	99.9	93.9	98.7
Baths or showers	97.8	88.1	78.7
Flush toilets	93.5	89.7	93.4
Number per 1,000 of population			
Passenger cars (1964)	253	373	156
Commercial vehicles (1964)	57	65	32
Television sets	155	362	248
Telephones (1966)	381	478	195
Education			
school enrollment of persons aged 5-19 years, 1960 (per cent)	80	81	75
Health			
Infant mortality rates (1966)	17.7	23.4	19.6
Persons per hospital bed	90	110	110
Persons per doctor	670	700	830

[a]Source: (3).

Table 3. Land utilization[a]

Description	Acres (million)	
Improved (sown) grassland	18.4	
Native grassland	13.0	
Total grassland		31.4
Land in field crops, gardens, orchards	1.4	
Plantation	0.9	
Land in fern, scrub, second growth	5.7	
Standing bush	2.7	
Barren and unproductive land	1.9	
Total, other farm land		12.6
Total occupied farm land		44.0
Land in cities and boroughs	0.4	
National parks, reserves, domain	5.1	
State forest land	9.8	
Other land, including waste land (mountains, bare rock, water surfaces, roads etc.)	7.1	
Total		22.6
Grand total		66.4

[a] Source: (1).

Mineral, Oil and Hydroelectric Resources

Resource endowment is a changing concept. It is rooted in the determinants of final demand, including international trade, and in the current organization and technology of production. As the requirements

of the economy and the rest of the world change, as the technology of production changes, the resource endowment will change. A case in point is the ironsand deposits along New Zealand's beaches. Hitherto considered useless they are now becoming the basis for an iron and steel industry, thanks to a newly developed reduction process. Modern techniques, new ideas and changing tastes will undoubtedly continue to add more resources to the existing base. The concept of natural resources is therefore very difficult to define, at least in the long-run sense.

Coal, clay, limestone and dolomite are the only non-metallic minerals discovered in economic quantities. Coal is produced in sufficient quantities for domestic requirements. Its deposits are considered adequate for the foreseeable future. Coal production in 1965 amounted to 2,659 thousand tons valued at NZ$ 15,559 thousand.

New Zealand's iron and steel resources are in the form of extensive ironsand deposits. Under the present steel expansion program which will convert ironsands into high grade steel New Zealand plans to produce about 75 per cent of the value of its required iron and steel demand by 1978. New Zealand is at present spending NZ$ 60 million a year on the import of steel thus, apart from the new industry diversifying and expanding New Zealand's whole economy, it should contribute substantial savings of overseas funds.

Gold contributed greatly to the early settlement and economic development of New Zealand. Today deposits have been exhausted and total production in 1964 amounted to only NZ$ 234,434.

Other metallic ores have been discovered in very small, non-economic quantities. New Zealand has been described as a museum of minerals - most minerals are present but in quantities too small to be of commercial value.

Small quantities of oil have been discovered and produced. In 1965 total production of petroleum amounted to 151,000 gallons at a value of NZ$ 12,000. There is also evidence of natural gas deposits which have not yet been exploited.

New Zealand is richly endowed with lakes and swift-flowing rivers of considerable importance as present or potential sources of hydroelectric power. In addition, electricity in New Zealand is also generated by harnessing geothermal power. An amount of 10,578 million KW hours was generated and made available for distribution in 1966.

The lack of mineral and oil deposits in New Zealand is quite striking. It seems to confirm the hypothesis that the smaller the country's geographical area the more skewed its resource base. With the exception of ironsand deposits there is no basis for big minerals-using industries to develop, particularly for large scale metals-using industries that have been among the most rapidly growing and growth inducing sectors in the industrialized countries.

Farming

The base of pastoral farming is provided by New Zealand's grasslands. Natural tussock grasslands occupy the hilly, mountainous country which is used for extensive sheep farming. The less steep country can be surface

sown and its grasslands are well suited for mixed sheep and dairy farming. On flat, gently undulating land grass is usually sown after ploughing. This area is used for extensive dairy and beef operations as well as for cash cropping.

Development of hill country has been stimulated by areal topdressing and seeding. Much of the land in the central region has been made productive by correction of a cobalt and molibdenum deficiency with consequent increases in carrying capacity and production.

Highly efficient grassland farming has enabled New Zealand to become one of the leading pastoral countries of the world. New Zealand's prosperity is based upon the production for export of wool, meat and dairy products. The farms of the country carry more than 57 million sheep and 7.2 million cattle, of which 3.4 million are dairy and 3.8 million beef.

Scientific research, extensive mechanization and the use of most modern farming techniques along with well distributed rainfall and a relatively mild climate have assured New Zealand farming a very high degree of productivity. Recent decades have witnessed a very substantial growth of contract services for farmers in harvesting and farm maintenance and improvement. This trend has been largely influenced by the production and availability of highly specialized new farm machinery which it would have been uneconomical for individual farmers to own. The pattern is one of more intensive farming for the land used has not expanded since early in the present century. This has meant a more intensive use of private and social overhead capital.

Roughly 13 per cent of the labor force is now engaged in agriculture, pastoral and other primary production. In 1965-66 the output per man in agriculture amounted to NZ$ 7,128 which is probably the highest in the world. Continuing increases in the productivity have been achieved despite the declining labor force. In the last decade total farm output increased by 43 per cent while total farm labor force declined by 9 per cent. The principal factors have been a general improvement in management practices and a heavy rate of investment in land improvement. In general, resource allocation in farming, more than in any other sector of the economy, is based on competition and efficiency.

Approximately 30 per cent of New Zealand farms are less than 100 acres, but these represent only a little under 3 per cent of the occupied land. About 38 per cent of the total consists of holdings of 5,000 acres and more. The smaller farms concentrate mainly on dairying while the larger ones graze sheep and cattle, often on steep hill country that can not be cultivated.

All the three major primary industries - wool, meat and dairy industries - operate, subject to government regulation, guaranteed minimum price schemes for their output. The marketing is effected through producer boards and commissions. Each of them consists of producers and government representatives. Dairy products are processed in a number of cooperative dairy factories owned by farmers, and are marketed centrally through the Dairy Board. The Wool Commission organizes wool auctions, and the Wool Board collects levies on all wool sold and applies them to

research and promotional activities. It also contributes to the budget of the International Wool Secretariat (also financed by South Africa and Australia). The Meat Producers Board does not market meat, but provides many services involving shipping, market promotion and development and research.

Farm incomes are not directly supported by the government. This is done indirectly by the boards and commissions mentioned above, whose aim it is to maintain a degree of stability in farm incomes by providing for basic or floor prices for butter, cheese, export meat and wool. These organizations are designed to cushion the effects of short-run market fluctuations, but not to insulate farmers from the influences of secular market trends.

Forestry

Planting of exotic softwood species, encouraged by the government in 1920s, is providing the basis for a major new industry in New Zealand. These species, particularly radiata pine, grow more quickly in the New Zealand climate than in most other countries of the world. Total area of introduced trees cover about one million acres, while the native forest occupies some 14 million acres, only about one-quarter of which is regarded as suitable for commercial development.

The proportion of timber from planted trees has risen from 13 per cent of the total timber milled in 1930, to 64 per cent in 1965. This has enabled the expansion of the pulp and paper industry which, after

meeting domestic requirements, is making an important contribution to the country's export earnings.

Manufacturing

The function of early manufacturing industries in New Zealand was to cater locally for the immediate needs of settlers. The growth of population and increased export income enabled manufacturing to develop at a steady rate. Manufacturing continued to be concentrated in industries processing farm products for export and those supplying food, clothing, housing materials and equipment and repairs for farmers. It was the outbreak of World War II and its shortages which changes the manufacturing pattern in New Zealand and gave a great impetus to industrial development. The post-war period has witnessed large increases in production from new development. Especially great contribution to the growth of manufacturing was by the engineering factories the expansion of which was stimulated by mechanization on farms, the high level of investment in New Zealand, the demand for consumer durables, and the increased imports of motor vehicles. There was also the development in the pulp and paper and the rubber industries.

The growth in production has been assisted by increases in manpower engaged and capital used. A measure of the increase in capital employed is that the value of land and buildings, plant and machinery increased almost four-fold between 1945-46 and 1962-63.

While industrial progress has been rapid, manufacturing is still organized on a relatively small scale. The law in New Zealand restricts

the membership of a partnership to not more than 25 persons, a private company to not less than two or more than 25 persons, and a public company to not less than seven persons. In 1962-63, 61 per cent of the factories employed 10 persons or less, a reflection of the fact that, partly as a result of geographical configuration, many factories still supply small local markets. Although these small factories are numerous, they account for only 12 per cent of the total value of factory output. There were 134 factories (1.48 per cent of the total) in 1962-63 where the number of persons engaged exceeded 200, but these factories accounted for 35 per cent of the total value of output.

Manufacturing today plays a vital part in employment. It is the largest of the non-service sectors employing about 27 per cent of the total labor force. Manufacturing output grew at about 8 per cent a year in real terms which is more than twice the rate of growth in agricultural output, and about four times the rate of growth of population. The government is actively encouraging industrial development regarding it as a major instrument in absorbing the surplus labor and maintaining 100 per cent full employment.

About 20 per cent of manufacturing consists of direct processing of farm products, another 14 per cent consists of domestic forest products. The remainder is distributed among other sectors, including textiles, building materials, metal industries and chemicals.

The processing of butter, cheese and meat and the production of paper and pulp are mainly for external markets. All other manufacturing is

oriented toward the protected home market. Excluding butter, cheese, meat and forest products the industry provides only 1 per cent of total exports, which is only 4 per cent of the total industrial production.

Early industrial production in New Zealand has been encouraged by a natural protection from overseas competition in the high freight rates on imports. Further growth came as a result of the protective effect of World War II. Today there exists in New Zealand a comprehensive system of import controls. Imports by the private sector are controlled through an annual Import Licensing Schedule which groups imports into different categories to which various import procedures are applied. The policy of import licensing is designed to ensure that interest and repayment of overseas debts will be met and that sufficient funds will be available for essential imports. But industrial protection has resulted also in a variety of small scale and high cost establishments. Only about one-third of the total value of import trade now consists of exempt items which include raw materials such as coffee beans, certain basic metals, a wide range of textiles, and essential consumer goods.

The cost of import protection in New Zealand is difficult to measure, because of the nature of quantitative import restrictions. Some attempts have been made (see (4) and (5)) which indicate that the cost is very high. For example, ex-factory prices of final domestic product often exceed c.i.f. prices of imported goods by 50 per cent or more. In terms of value added, domestic production costs sometime exceed international costs by 100 per cent or more. It is important to measure costs of protection and thus gain indexes with which to rank protected industries in terms

of their cost to the community. On the basis of such objective criteria a better pattern of resource allocation can be achieved, even if such criteria is of an approximate nature.

The Role of Government in the New Zealand Economy

In the New Zealand economy the volume and pattern of production and consumption reflects to a large degree the decisions of private individuals and private firms. But the influence of public authorities (central and local governments) is quite important. In the last two decades total public authority expenditure has averaged to 33 per cent of the GNP, a significant part of the total national expenditure.

The expenditures of public authorities which provide an important source of income for private persons and important markets for private producers consist, in the first place, in securing the framework of external security and internal law and order, the basic facilities of transport, power and sanitation, and the education and health services, which are prerequisites for efficient private production, and expenditures on various aids to development in the private sector. In addition, the trading enterprises operated by central government directly through public corporations, and those operated by local authorities, make a significant contribution to private incomes and expenditures.

The extent of government's participation in the economic process can be judged to some degree by the following list of government-owned enterprises:

Banking:	Reserve Bank (central bank) Bank of New Zealand (trading bank) Post Office Savings Bank
Finance, Insurance:	State Advances Corporation State Insurance Office (accident, fire) Government Life Insurance Office Public Trust Office (estates, etc.)
Transport, Communications:	Post Office (telegraph, telephones) Railways National Airways Air New Zealand Commercial Broadcasting and Television
Industrial:	Electricity Department State Coal Mines Tourist Hotel Corporation Linen Flax Corporation

The most important operation within the public utility sector is the generation of electric power. The present generating capacity of the government's power system is about 2,620 megawatts. Construction of new stations and additions to the existing ones over the next ten years is expected to provide a further 2,683 megawatts of capacity.

New Zealand is one of the first modern welfare states. The principal services financed by the government are health and education, together with the payment of pensions (as early as 1898) and monetary benefits under the Social Security system. The cost over the past five years, 1963-1967, of social services (health - including hospitals - education, pensions and social security) as a percentage of national income has amounted to about 17 per cent.

Control over the level of economic activity is exercised by government's fiscal and monetary policies and physical controls such as foreign

exchange control, import licensing and building programming. These are some of the major instruments with which the principal economic objectives such as a satisfactory rate of economic growth, full employment, stable prices, balance of payments equilibrium and an equitable distribution of income are tried to be achieved. Because of the importance of foreign trade to the New Zealand economy, the offsetting of external disturbances in the national income stream is especially difficult and vital. In order for the policy instruments to be effective an attempt must be made to give the monetary authorities and the appropriate government agencies clear operational objectives expressed as far as possible in quantitative terms. These objectives mostly for political reasons, are seldom formulated with the degree of clarity and explicitness required.

External Trade

Throughout its history New Zealand has depended on overseas trade for its development and progress. In fact, the economy of New Zealand itself is a product of international trade, shaped and determined by the forces of rapidly expanding Britain - the dominant economic force of the 19th century.

Diffusion of Development Process to New Zealand

During the sixty years between 1815 and 1875 the Industrial Revolution began to transform the predominantly agrarian economy of Britain into the "workshop" of the world. Britain's population moved into the

cities and the nation specialized increasingly in the production of manufactures. The expanding need of rising industrial complex led to growing pressures of demand on Britain's natural resources, supplies of raw materials, particularly minerals and foodstuffs. The shortages in these increased costs of production and prices and prompted the outflow of labor and capital to the periphery in search for cheaper supplies.

Following the first shiploads of settlers in 1840 and the establishment of regular lines of communications and shipment, especially after the advent of refrigeration, New Zealand rapidly developed into an important supply base of pastoral products to satisfy the input requirements of Britain's manufacturing complex. New Zealand's economy has been developed as a complement to the British economy to the benefit of both. Along with British settlers and capital a combination of industrial entrepreneurship and democracy pervaded the country creating a base for the high achievements of today.

Trade relationship with Britain was a vehicle through which scientific advances, social changes and economic progress were transmitted from the center to the periphery. As income, investment and population grew so did New Zealand's exports. And since the dynamic nature of Britain's economy provided secure and ever expanding markets, the growth process in New Zealand could proceed at a relatively high and stable rate.

Composition and Dependence on External Trade

The degree of dependence of New Zealand upon external trade is indicated by the fact that for the nine years ended March 31, 1967 exports

averaged 23.7 per cent and imports 23.9 per cent of gross domestic product. The relevant time series are given in Table 4. For this reason, fluctuations in the terms of trade have a considerable influence on the country's economy. Increments in the volume of exports can be easily nullified by adverse movements in the terms of trade. Loss of international purchasing power of exports which the country has experienced over a recent 12 year period is illustrated later in the text. Table 14 lists the terms of trade effect, Z, which is defined as the product of the terms-of-trade index and the value of exports at constant prices. It is interesting to note that only once in the time period studied was the terms of trade effect positive, indicating a gain in the purchasing power of exports. The loss of the purchasing power has been quite considerable in 1959 and 1962 amounting to 5.7 and 4.6 per cent of the gross national income, respectively.

New Zealand's dependence on a small number of pastoral products for her exports is brought out by figures in Table 5 showing the percentage of pastoral exports to total exports. It can be seen that more than 90 per cent of the total value of exports is still derived from wool, meat and dairy products. While these exports have generally done well in the past, in spite of cyclical fluctuations, their future is far less certain for reasons that will be explained shortly.

Among the main individual constituents of New Zealand's export trade, wool occupies the most important relative position, claiming about 35 per cent of the total value of merchandise exports. The share for the dairy products amounts to 26 per cent, that of meat also to 26 per cent while the share of hides, skins and pelts amount to 4 percent of total exports.

Table 4. Gross domestic product (GDP), exports and imports and their percentage value of GDP (current prices in NZ$ million)[a]

March year	GDP	Exports	%	Imports	%
1958-59	2,294	576	25.1	578	25.2
1959-60	2,453	671	27.3	555	22.6
1960-61	2,660	630	23.7	683	25.7
1961-62	2,754	634	23.0	695	25.2
1962-63	2,967	670	22.6	654	22.4
1963-64	3,239	787	24.3	759	23.4
1964-65	3,546	838	23.6	793	22.4
1965-66	3,798	832	22.0	933	24.6
1966-67	3,977	884	22.2	955	24.0
		Average	23.7	Average	23.9

[a]Source: (6).

Table 5. Exports of pastoral products[a]

Year	Percent of total exports
1940	97.2
1945	88.4
1950	96.3
1951	97.4
1952	96.0
1953	95.9
1954	94.7
1955	95.8
1956	94.5
1957	93.4
1958	93.7
1960	94.0
1962	93.4
1964	93.5
1965	93.2

[a]Source: (3).

Balance of Payments on Current Account

New Zealand's economic growth has been accompanied by continuous balance of payments difficulties. Apart from the war years in which the availability of imports was restricted and during which the terms of trade were favorable, current account deficits have persisted and become more difficult to manage. The recent balance of payments situation is shown in Table 6.

Table 6. Current account balance (NZ$ millions)[a]

	Fiscal years					Years ending	
	1962-63	1963-64	1964-65	1965-66	1966-67	Oct 1966	Oct 1967
Current account							
Export receipts	650.8	730.4	768.6	774.1	795.8	824.6	734.6
Import payments	521.6	627.6	657.0	742.4	722.4	739.6	687.6
Trade balance	129.2	102.8	111.6	31.7	73.4	85.0	47.0
Invisibles(net)	-114.8	-118.5	-136.0	-149.3	-180.1	-166.9	-182.7
Current account Balance	14.4	-15.7	-24.4	-117.6	-106.7	-81.9	-135.7

[a]Source: (2).

New Zealand's vulnerability rests on its overdependence on exports of a small number of primary products, because a small change in the prices of a few export commodities can have a very large and serious impact upon the total export receipts. Although a short term decline in export prices can be offset or mitigated by drawing upon reserves of foreign exchange or borrowing, the results of depressed prices can not be avoided in the

long-run. There will have to be an eventual reduction in the amounts of essential imports required for the maintenance of a satisfactory rate of economic growth and full employment. The simple econometric model for the New Zealand economy introduced in the next section will show that there is a discrepancy between the actual and the predicted rate of growth and that the unfavorable impact of the terms of trade effect is one of the main reasons responsible for it. The effect of the adverse movement in the terms of trade is also illustrated in a study by W. Rosenberg (7). He calculated that during 1955-60 the unfavorable trend in the terms of trade cost New Zealand almost NZ$ 500 million which was considerably more than the total balance of payments deficit between 1950 and 1964. Finally the very large deficit of NZ$ 135 million in the year ended October 1967 is also mainly due to a reduction in the export of wool.

The state of the balance of payments is determined only partially by the terms of trade. The principal determinant is actually the level of internal demand. If the level of internal demand is inflationary, there will be an increased pressure of demand for imports and a deterioration in the balance of payments. Inflation in New Zealand is typically financed in part by the growth of export earnings and in part by an expansionary budgetary policy, including factors such as an expansion of social services, large-scale subsidies for investment in housing and consumption, and the desire to maintain a high level of employment. The fact is that national expenditure is often allowed to grow at a rate almost identical with the growth of export earnings. Thus in spite of record levels of export receipts New Zealand is often facing serious ex-

ternal payments problems.

One difficulty is that economic judgements about the instruments to be used do not stand alone but are inextricably linked with political judgements. This is equally true with regard to the relative emphasis on monetary or fiscal measures. Governments in New Zealand have been reluctant to implement a firm policy of economic restraint by the use of changes in taxation or in public expenditure as a means of varying the level of economic activity. A consequence has been that most of the attempts at controlling inflation have given major emphasis to monetary measures. Checking inflation in this way, however, is much more difficult than it would be if a more varied set of policy measures were politically acceptable. And usually, the small measure of restraint resulting from such policies has largely been offset by expansionary influences from government's own fiscal operations.

Another difficulty stems from the fact that measures to achieve particular objectives may militate against the attainment of other objectives which may be of equal or greater importance. The important point is to achieve an acceptable balance among the various economic objectives. In practice in New Zealand major emphasis has been given to the objectives of full employment and an equitable distribution of income. Undue weight on these objectives has meant the failure to secure balance of payments equilibrium and to keep foreign exchange reserves at a level capable of withstanding short-term adverse fluctuations in export prices. As a result, overseas reserves are often reduced to very low levels relative to current external payments, placing New Zealand in a more

vulnerable position to a fall in export income, a contingency that can always happen. Stress on full employment and income redistribution has brought in its train a wide variety of other undesirable effects such as unstable prices, a lower rate of economic growth, acute shortages of labor, rising costs, continued import restrictions and a narrowing of consumer choice.

In contrast to surplus on merchandise trade, New Zealand has consistently shown a large deficit on invisibles. Transportation (shipping) costs and servicing charges on overseas borrowing have contributed most to the rise in the deficit of this category. New Zealand's location far from any major overseas markets has the disadvantage of high freight costs which have shown a continuous upward movement in recent years. Deficits in overseas exchange transactions and private overseas capital investment in New Zealand have required substantial overseas borrowing by both the government and private sectors. This in turn has given rise to a marked increase in external payments through the banking system for dividends and interest. A part of this increase can be expected to be financed by the growth of reinvested earnings of overseas companies, expressed in the balance of payments as private capital inflow.

On the average, interest charges on New Zealand government debt domiciled in overseas countries are less than half as large as those of the private sector. In a recent seven year period the total (private and government) interest and investment income payments on overseas capital averaged to about 5.5 per cent of export receipts which is a relatively small ratio and not a limiting factor on external borrowing.

Direction of External Trade

Early trade was principally with Australia. It was stimulated by Australia's gold rush in 1850s and demands of the rapidly increasing Australian population. The principal exports were wool, grain and potatoes. Introduction of refrigeration in 1880s drastically changed the pattern of external trade making possible the shipments of perishable foodstuffs to more distant markets. This had a market effect on New Zealand's trade with Britain. Within a relatively short period of time Britain replaced Australia as New Zealand's principal trade partner and became New Zealand's predominant market for exports and the biggest supplier of imports. New Zealand's consequent development was in direct response to the needs of British industries. Only in recent years the United Kingdom's share of New Zealand's export trade has been declining. But the United Kingdom still remains New Zealand's best export market for butter and lamb (accepting 90 per cent of total exports) and for cheese (accepting 80 per cent of total exports).

The proportion of New Zealand's exports going to the United Kingdom prior to World War II was between 70 and 80 per cent of the total value of exports. With the growing diversification of New Zealand markets in recent years this proportion has fallen to only 47 per cent. Trade with the Commonwealth countries has always greatly exceeded that with other countries. During recent years, however, there has been a decline in the proportion of the export trade going to Commonwealth countries, occasioned mainly by the export of wool to European countries and meat to the United States. In 1948 Commonwealth countries took 80 per cent of the total

exports. By 1964 this proportion had fallen to 56 per cent. The changing pattern of New Zealand's external trade can be seen in Table 7.

Table 7. New Zealand's pattern of external trade by countries of destination and origin (per cent)[a]

	Exports[b]				Imports[b]			
Year	UK	Australia	USA	Others	UK	Australia	USA	Others
1860	70	27	-	3	56	42	1	1
1870	52	46	-	2	58	36	1	5
1880	75	21	2	2	56	31	4	9
1890	75	15	6	4	67	17	6	10
1900	77	14	6	3	61	17	10	12
1910	84	9	3	4	62	14	8	16
1920	74	5	16	5	48	17	18	17
1930	80	3	5	12	47	8	18	27
1940	88	3	4	5	47	16	12	25
1950	66	3	10	21	60	12	7	21
1960	53	4	13	30	43	18	10	29
1966	45	5	14	36	38	19	12	32
1967	44	6	15	35	33	21	11	35

[a]Source: (8).

[b]Gold is included in figures up to 1950.

Importance of the British Market

Since the introduction of refrigerated shipping New Zealand's agricultural production has been largely geared to meeting a substantial proportion of Britain's import requirements for meat and dairy products. In recent years, efforts to diversify New Zealand's export markets have met with some success, but the greatest proportion of butter, cheese and lamb is still marketed in Britain. Dependence on the British market for exports of lamb, butter and cheese is also reflected in the domestic production patterns. Since there is a great demand for butterfat in the United Kingdom, over 70 per cent of the New Zealand dairy herd consists of Jersey cows because their milk has a higher butterfat content than the milk of other cows. In addition, the types of sheep raised in New Zealand are bred not only because they are best suited to the climatic conditions, but also because they produce the type of lamb which corresponds to the taste of the British consumer.

The heavy and unique dependence of the New Zealand economy upon the export of these major agricultural products to the British market forms the basis of New Zealand's case for special arrangements to ensure that this trade continues. Retention of the present share in the British market remains of vital importance to the New Zealand economy because of the fact that there are no adequate alternative markets in sight. Efforts to market pastoral products elsewhere are frustrated by the protectionist agricultural policies of many industrialized countries. Furthermore, subsidized surpluses are frequently dumped on relatively free markets depressing prices and aggravating the instability of export earnings from

these products. Marketing of dairy products and meat in the underdeveloped countries is wrought with similar difficulties mostly because these countries are too poor to afford imports of pastoral products on a large scale which to them are luxuries. In addition, there exist religious and social prejudices and consumption preferences for local foodstuffs. Hence the importance of the United Kingdom, the world's largest importer of agricultural products, the market of which has remained relatively free of tariffs and other barriers to trade for Commonwealth exporters.

Trade Relations with Other Countries

Australia

Economic development of New Zealand and Australia has been largely parallel making the two competitors in the British market. For this reason New Zealand's export trade with Australia declined, accounting only for about 5 per cent of the total for recent years. At present, Australia's market is of importance for New Zealand only for fish, timber, frozen vegetables, pulp and paper. There has been a promising upward trend for exports of forest based products. Recent trade statistics indicate that Australia is taking now nearly 90 per cent of New Zealand's paper and pulp exports. Imports from Australia in the last decade have shown a gradual increase. This is explained mostly by Australia's successful industrialization and export diversification. Nearly 80 per cent of all imports from Australia comprise iron and steel, motorcars, farm machinery and other industrial products, while the remainder is made up mostly of wheat and sugar.

United States

New Zealand's trade with the United States has shown a gradual increase attaining about 14 per cent of the total export value in recent years. Imports have averaged at about 11 per cent. The increased trade has resulted mainly from increased receipts for wool, beef and mutton. While the United States trade policy is continuing to be liberal in respect to these products, severe import restrictions and price supports have led to a virtual exclusion of New Zealand butter and cheese from the United States market. There seems little hope for the easing of these barriers because of large surpluses that have accumulated as a result of protective measures. The main imports from the United States include farm and earth moving machinery, aircraft, aircraft engines, synthetic fibers and plastic material.

Japan

The growth of New Zealand's trade with Japan in recent years has been the most encouraging feature of the development and consolidation of markets outside Europe and North America. Japan has now become New Zealand's third largest export market absorbing nearly 10 per cent of New Zealand's total exports. And Japan is the fourth most important source of imports which amount to about 7 per cent of all New Zealand imports. The major export commodities are wool, meat (mainly mutton), sawn logs, casein, milk powder and butter. Japan is now New Zealand's largest market for mutton. Imports cover a wide range of manufactured goods and industrial raw materials.

The European Economic Community (EEC)

The growing importance of the EEC in recent years is reflected by a nearly fourfold increase in export receipts since 1939. About 80 per cent of these are due to wool which has not been confronted with quantitative or tariff restrictions, and has been able to grow in response to increased internal demand for industrial raw materials along with the rapid economic expansion and integration of the EEC. All member countries of the EEC maintain subsidized farm sectors and shelter their farming populations from competition of more efficiently produced agricultural imports, particularly products of the dairy industry, by highly restrictive import quotas. These protectionist tendencies of the EEC seriously handicap New Zealand's efforts to expand trade in butter, cheese and other dairy products with this region and explain their relatively static export share over the last decade. Total exports to the EEC amount to about 10 per cent, total imports to about 8 per cent. The trend to earn a surplus of exports over imports in the trade with the EEC has been on the increase.

Other countries

New Zealand has also attempted to expand its markets to the lesser developed countries of Asia, Africa and Latin America, but without too much success. The most serious difficulty seems to arise from the fact that meat and dairy products which New Zealand tends to supply are relatively expensive and have a high income elasticity of demand. Since the

underdeveloped countries devote a substantial part of their foreign exchange earnings to imports of capital goods their demand for New Zealand products is very limited. Another factor limiting New Zealand's opportunities stems from the disposal operations of countries which maintain protected and subsidized farm sectors and accumulate surpluses. Then there are religious barriers, consumer preferences for local, traditional foods, lack of expensive cold-storage facilities and other obstacles in the way of increased trade with lesser developed countries.

The Changing Pattern of World Trade

Economic development and growth of the peripheral regions in the 19th century was relatively stable and complementary to that of the center - the resource scarce and consequently freely trading United Kingdom. As a result of far reaching and important changes in the economic and political power structure of the world the system of forces shaping the flow of international trade is quite different today. The disruptive effects of two world wars and a world depression disintegrated the pattern of multilateral trade which rested on the economic and military strength of the United Kingdom and the continuing export of capital from that country. Britain has been replaced by the resource rich and protectionist United States as the principal exporting and importing country and the banker of the world. In view of its tremendous strength it is understandable that the economic fortunes of other nations depend now, directly or indirectly, upon the events within the United States economy. There has

also been the emergence of the EEC, the rise of agricultural protectionism and the rapid and altered influence of industrialization and technology upon resource endowment, productive efficiency and therefore comparative advantage of various countries.

These changes are reflected by the changes in the direction and the composition of the flow of international trade. International trade statistics (9) indicate rapidly increasing trade in manufactures among advanced industrial countries and stagnating trade between advanced industrialized countries and underdeveloped nonindustrialized countries, particularly in primary commodities. The pattern of world trade has shifted from vertical trade between primary and manufactured goods to horizontal trade in manufactures, particularly heavy indistrial goods and chemical products. Such a structural change in world trade has created great difficulties for primary producing countries.

The difficulties confronting New Zealand in particular arise from:

1) technical progress in industrialized countries which provides synthetic substitutes for natural primary products (especially wool) and reduces the raw material content of manufactures,
2) the relatively low income elasticity of demand for primary pastoral products as compared with manufactures,
3) the influence of technical progress in the agriculture of industrialized countries in increasing domestic supplies, and
4) the alleged long run tendency for relative prices of primary products to deteriorate in relative terms (worsening of the terms of trade), thus reducing the export earnings of countries depending on exports

of primary products below what they would otherwise be. These structural factors are accompanied by deliberate protectionist policies of the industrialized countries such as price supports, restrictions of market access (quotas, import licensing), subsidized export of agricultural surpluses, and taxation of imports substitutable for domestic products (tariffs).

The break-down of the original center-periphery growth mechanism has encouraged most of the underdeveloped countries and a number of high income primary products exporting countries including New Zealand to accept a new philosophy of "inward looking industrialization" based on import substitution. These countries no longer believe that they should specialize in primary products just because they have traditionally had comparative advantage in such products. They want to develop some new exports of manufactures or industrialized goods and demonstrate that they can expand capacity, produce efficiently and develop a comparative advantage in some lines of industrial production.

The close association with the stable British market and the tailoring of domestic supplies to meet the latter's requirements have not required fundamental changes in the New Zealand agricultural productive pattern yet. The country has had to find markets only for part of her additional output. So far this search has been successful because of some diversification in processing, particularly by the dairy and meat industries, which has enabled her to find commercial outlets on the world market. In the future, however, Britain is not likely to provide a market for much of the expected increase in New Zealand's exports. More important, if

the United Kingdom joins the EEC, New Zealand may even lose her preferences over European producers in the United Kingdom. Dissolution of the British Empire and the consequent weakening of Britain's military and economic position have led to changes in its agricultural policy which are viewed with great concern by New Zealand.

Britain's Post-War Economic Policy and Implications for New Zealand

British Agriculture Act 1947 (for details see (10) and (11))

The most influential post-war agricultural legislation has been the British Agriculture Act of 1947. It put an end to laissez-faire in agricultural policy which had prevailed for over a hundred years. The objectives of the Act were to promote and maintain

> by the provision of guaranteed prices and assured markets... a stable and efficient agricultural industry capable of producing such part of the nation's food and other agricultural produce as in the national interest it is desirable to produce in the United Kingdom and of producing it at minimum prices consistently with proper remuneration and living conditions for farmers and workers in agriculture and an adequate return on capital invested in the industry (10).

Price guarantees provided in the Act have been maintained by payments to farmers of the difference between guaranteed price and the average market price. These are called deficiency payments. To encourage efficiency special production grants and other incentives have been devised along with close control of farm prices and incomes.

British National Plan 1947 (for details see 9)

The Agricultural Act of 1947 has provided precedence for more extensive government intervention in agriculture. Since 1964 when a comprehensive National Plan was published, there has been general acceptance of the necessity for economic planning. The Plan's section on agriculture spells out guidelines for the future of agriculture and points out to the direction in which the British agricultural policy should act in order to attain the aim of greater self-sufficiency. It clearly indicates the resolve of the government to expand domestic production and therefore implies the danger that the British market for pastoral products may fail to expand in line with the population increases or may actually contract.

Impact on New Zealand

So far, in general, the use of deficiency payments have been preferred as against tariffs, variable levies and quotas (with some exceptions) permitting Britain to continue its traditional trade policy. However, measures aimed at insulating farmers' incomes have already given British agriculture considerable opportunity for expanding its output and concentrating its structure to the detriment for primary commodity exporters, including New Zealand. Expansion of British agriculture sponsored by government subsidies has forced New Zealand in recent years to develop supplementary export markets elsewhere, notably in the United States, the EEC and Japan. This dispersion of trade is indicative of the continued disintegration of the 19th century trading pattern.

Britain and the European Economic Community (EEC)

Very significant issues for New Zealand's future political and economic development have been raised by Britain's decision and attempts to join the EEC. Britain realizes that if it becomes associated with the EEC it will be able to influence the direction of the Community's development and play a more significant role in world politics. The obstacle in the way is the common agricultural policy (CAP) which Britain would have to adopt. In the absence of special arrangements Britain's membership in the EEC would mean an end to the open Commonwealth trading system abandoning duty-free and unrestricted entry into the United Kingdom for a wide range of Commonwealth imports.

The principal objective of the European Economic Community is to establish a complete economic integration of the member countries by a gradual elimination of all trade barriers within the union and the adoption of a common external tariff (CET) together with a common commercial policy in trading relations with third countries. The common agricultural policy involves higher uniform food prices through the operation of an elaborate system of protection against imports. These consist of the use of variable levies and minimum import prices in combination with direct prohibition of imports and support buying of domestic produce. The effect of the policy is to maintain and increase a high level of sufficiency of agricultural products within the EEC.

Implications for New Zealand

The implications for New Zealand raised by Britain's intended entry into the EEC are very complex and have not been assessed in detail. The task is impossible mainly because the common economic policy is still in a state of evolution and there is no certainty as to the final terms of agreement.

An attempt to indicate the change of import policies for principal New Zealand exports to the United Kingdom in case of its entry into the EEC is made in Table 8. The table contrasts present United Kingdom regime with that to be expected from the enlarged Community. The column showing the value of export earnings in millions of New Zealand pounds for 1965-66 reflects the relative importance of each commodity. Finally, New Zealand's exports to the United Kingdom are given as a percentage of total exports for each category.

The present United Kingdom regime grants all New Zealand major exports free entry and preferential treatment in some cases. The EEC regime, if applied to Britain would, in contrast, expose these to an external tariff and/or to the restrictive policies of the Community's common agricultural policy. Based on various available sources (10), (11) and (12) the consequent possible impact on New Zealand's principal exports is briefly described next.

Beef and veal supplies behind the protective arrangements of the enlarged Community are expected to increase and lessen New Zealand's exports to Britain. Retention of present market share in the United Kingdom

Table 8. New Zealand: principal exports to the UK affected by the UK adopting the common agricultural policy[a]

Commodity	Present UK regime	EEC regime	Exports 1965/66 million	As % of total NZ exports of each commodity
Beef and veal	Free 20% pref. boned	CAP[b] and CET[c]	6.7	25.0
Mutton and lamb	Free	20%	49.9	82.5
Butter	Free	CAP	46.8	85.9
Cheese	Free pref.	15% CAP 23% CET	16.1	78.5

[a]Source: (11).

[b]Common Agricultural Policy.

[c]Common External Tariff.

is not of a very fundamental importance since alternative markets have been secured. The largest of these is the United States although increased quantities of beef have been sold to Japan and a large number of minor markets elsewhere.

Mutton and lamb face far greater difficulties. While New Zealand beef has been successfully diverted to other markets Britain has still remained New Zealand's most important buyer of mutton and lamb. Sheep have traditionally played an important part in the life of the British which have acquired a preference for mutton and lamb not generally found in other countries. It is estimated (11) that the British eat at least half as much mutton and lamb as they do beef and veal. New Zealand lamb

and mutton trade to the United Kingdom which has been built up to meet this unique requirement is therefore of great importance.

If the present EEC arrangements for sheep were to be extended to the enlarged Community, it would be protected by the 20 per cent external tariff provided for under the existing regulations. There will be substitution of supplies from the member countries and British home suppliers will also take advantage of the higher prices to obtain a larger proportion of the United Kingdom market. This will seriously prejudice New Zealand exports the prospects of which are not too favorable.

The most serious problem concerns New Zealand exports of dairy products the supplies of which have been rapidly mounting in the EEC. New Zealand government sources (12) indicate that if the present EEC price structure for dairy products is extended to Britain, butter prices will more than double leading to a substantial reduction in consumption. At the same time the effect of the import levy and other restrictions would be to discriminate against butter imported from New Zealand in favor of butter imported from Britain's fellow community members. It is estimated that supplies available in the member countries will within a few years be more than sufficient to meet the reduced requirements for the British market. Another study (11) is more specific and predicts that after a short transitionary period the amount of butter left for all third country imports into the United Kingdom will be only about 100,000 to 150,000 tons which is less than New Zealand's present exports to Britain. It states that "while the prospects for New Zealand dairy produce for a period to about 1975 are by no means favorable the outlook for ten to fifteen years seems even less happy".

The same gloomy picture applies also to New Zealand cheese exports to Britain.

Wool is treated as an industrial product and it bears no EEC common tariff since it does not come under the directives for agriculture.

Special Arrangements for New Zealand

Application of common agricultural policy and common external tariff without safeguards on New Zealand's exports would drastically reduce its market share and give competitors within the EEC a substantial advantage in the British market. This means that New Zealand would have to either find new markets or cut down its domestic production. Alternative outlets, at least in the short run are very difficult to secure for reasons already indicated, while the substantial loss of export income would disrupt domestic activity and have most disastrous consequences for New Zealand's future economic development.

New Zealand's vulnerability, its high and unique dependence on the British market has been recognized both by the United Kingdom and the members of the EEC . Although the British government has declared its readiness to accept the existing institution and arrangements of the EEC it has nevertheless made it clear that EEC membership would not be taken up without agreement to safeguard New Zealand's essential interests. British Foreign Secretary Mr. Brown, made it clear in a recent statement to the Council of Western European Union at the Hague on July 4, 1967 (13).

It is not possible, at this stage, to indicate what form the special

arrangements for New Zealand might take. They would have to include at least the following: continued opportunity for New Zealand to compete in its traditional market as part of an enlarged Economic Community on a fair basis with community suppliers, the opportunity to retain access to the market for at least those quantities which are now supplied, and the opportunity to share in any expansion of the market in the future.

Capacity to Transform

It makes a great difference to the economic development of a country depending upon international trade whether or not it is capable of changing with the world. The difficulty arises when the change abroad is of a negative character - a change in taste away from the country's exports, a discovery of competitive sources of supply, a technological change which replaces the natural product previously exported or reduced the demand for it. Capacity to transform is capacity to react to change by adapting the structure of foreign trade and internal economy to the new situation in an economic manner. In a private enterprise system capacity to transform requires the existence of a price system reflecting actual costs and responses to profit and income differences on the part of entrepreneurs and owners of productive factors. An increment of resources should be invested in export, import-competing, or domestic industry depending upon the relative rates of return in each. If all factors are continuously reallocated so as to equalize returns at the margin, industries with falling prices uncompensated by increases in relative efficiency should lose factors until the decline in production costs arrests the fall in price and factor return. Similarly, there should be a gain of

resources for industries with rising prices. For the system to work, it must be possible for profitable industries to grow, attracting new entrepreneurs, new supplies of labor, land and capital. Industries rendered unprofitable by rising costs, declining demand or increasing competition from more efficient source of supply must readily release their factors of production and lose their attraction to entrepreneurs. There must be occupational, spatial and social mobility to accommodate the shifts of factors required by evolving economic opportunity. These shifts must be at the margin and on a continuous basis.

Obstacles to Change in New Zealand

There have been several natural, traditional and institutional obstacles limiting New Zealand's capacity to transform on a continuing basis.

New Zealand has had reasons to regard her comparative advantage in pastoral products as a natural blessing and not as a forced imposition to be thrown off. Exports of wool and meat have long held an advantageous position among primary products. Compared to cotton and rubber income elasticity for them has been high and they have faced little substitutability from the synthetics industry. Until recently, the United Kingdom has provided an expanding market and given preferences. Furthermore, the smallness of domestic market and limited mineral resources have made New Zealand hesitant in diversifying her exports by building up competitive industries and thereby reducing dependence on pastoral products. Only relatively recently has there been serious discussion on thoroughgoing industrialization.

For a long time, New Zealand has maintained a system of quantitative restrictions on imports. The existence of import and other licensing has insulated domestic industry from increased efficiency overseas and enabled the manufacturers to cover their costs. The dependence of industry on import for raw materials and capital goods has ensured that the major decisions on scale and method of production is made by public servants who have no direct financial interest in the outcome of their decisions. They are not benefitted by right decisions or penalized by wrong decisions. The divorce of decisions from incentives has also been extended to the sales of the major New Zealand pastoral exports by the institution of the various marketing agencies. Thus the existence of a vigorous entrepreneurial spirit and capacity to change has been greatly limited.

Import restrictions are a form of protection which tend to result in misallocation of scarce resources for investment and production since no administration can expect to be a reasonable substitute for the price mechanism. Furthermore, there is no criterion which could serve as a major guideline for government incentives to improve resource allocation. The government system of quantitative import restrictions makes it difficult to compare costs of domestic industrial production with international standards and therefore it is impossible to isolate those industries and products in which New Zealand has a comparative advantage and which would benefit the balance of payments situation most.

The functioning of the market mechanism has been also greatly weakened by the insistence of 100 per cent full employment which has been the

overriding objective of the economic policy. The outflow of labor from the highly efficient agriculture in addition to the annual increase in population and immigration has been absorbed in secondary and service industries. These have been created and continue in a relatively inefficient state under the protection of import licensing and without regard to efficiency. Emphasis on over-full employment has removed one of the incentives to technological change since any change in production methods that would result in the same output from less labor has been discouraged. Inefficiency and uneconomic nature of manufacturing is approved as the unavoidable result of the narrowness of the domestic market and is justified on social and political grounds.

The preference for maintaining stability and the status quo over rapid progress and change is also explained by the welfare state of high living standards that exist in New Zealand. New Zealand is quite well off as it is. Per capita income levels are high, the population is well fed and affluent. There is not the same urgent need for development which besets the poverty stricken underdeveloped countries. The thoroughgoing welfare state policies in New Zealand have achieved a very high equalization of income distribution. The basic wage has a character of a living wage rather than a payment for skill. Since little premium is placed on efforts to gain skills and raise productivity, the wages for unskilled workers are relatively high. Thus those industries which have a large component of unskilled labor often produce at high cost contrary to the principle of perfect competition. There is a comprehensive social

security scheme which provides free hospital and medical care, cash benefits in old age, family benefits for each dependent child and many others.

Competition in New Zealand is also circumscribed by government and voluntary regulation. Nationalized industry is very important comprising transport, communications, electricity, housing, finance, insurance, coal, shipping. In addition, there are various boards and commissions that supervise and set limits to competition.

To the extent that the interplay of market forces are absent, the reorientation of the economy to the altered external circumstances can be assisted by deliberate economic planning. Since 1962 there has been a general acceptance of the necessity for economic planning in New Zealand. The government has organized a wide-ranging National Development Conference the objectives of which are:

> To outline a programme and set targets for national development, which over the next decade will give the necessary guidance and stimulus and provide the fullest opportunities and facilities for all sections of the community to develop and direct their resources, skills, know-how, and productive effort into those channels which can best promote economic growth and social development. In these ways to achieve a rate of economic progress which will ensure adequate employment opportunities for a growing population, maintain high levels of social welfare, and promote a rising standard of living (12).

Initial planning in New Zealand has been rather compartmentalized. It has been undertaken by various agencies with various degrees of thoroughness and often without sufficient cross consultation as to the consistency of individual plans. The range of available statistics has also been rather limited due to insufficient basic economic research. Recent economic developments, especially the threat of the United Kigndom

to join the EEC have emphasized the need for flexible economic policies and provided a further stimulus for comprehensive economic planning. Despite its inevitable limitations, a long term perspective of national development can provide a better basis for decision making in both the private and public sectors of the economy and can enable the effects of changes in basic assumptions and the implications of possible alternative policies to be better assessed.

Stability and Change

As a result of the changing pattern of world trade New Zealand is faced with serious and complex long-term economic problems. A major problem arises from external trade. In spite of persistent past efforts to insulate the New Zealand economy from the impact of external disturbances, and in particular from fluctuations in the terms of trade, they remain an important determinant of the level of activity in the domestic economy. Fluctuations in export prices exert a profound influence on the rate of growth of aggregate income. A rise in export receipts raises incomes in the farming and associated industries, heightens expectations and almost invariably generates increases in the farm sector's investment and consumption. This stimulates higher expenditures throughout the economy. In addition, increased export receipts also give rise to a feeling of optimism which induces increased expenditures by consumers, by businesses and by government. These increased expenditures are reflected in substantial increases in the level of imports of raw materials and components for manufacturing industries. Usually a time lag is involved

and expenditure on imports and other goods and services increases while export receipts may be declining. A sharp rise in the export receipts will hasten the rate of growth of aggregate income while a fall in the export receipts will tend to have a depressing effect. Changes in the export receipts and import payments have a direct significance for the overall availability of money via the movements in the balance of overseas exchange reserves. A surplus in the balance of overseas exchange transactions adds money to the banking system and some other financial institutions while a deficit reduces liquidity. Because of New Zealand's high dependence on international trade fluctuations the balance of overseas exchange transactions from one year to another can be quite substantial and the consequent effects on the general level of activity in the economy very difficult to control. It is therefore of great importance whether the economy is inherently stable and the impacts of outside disturbances can be largely absorbed without cumulative departures into inflation or stagnation so that a satisfactory rate of growth and full employment can be maintained while the economy transforms and adjusts itself to external changes.

This will be studied more fully and in detail in the next section by means of a simple econometric model which will investigate into the economic structure of New Zealand and its stability.

STABILITY INVESTIGATION OF THE NEW ZEALAND ECONOMY

Econometric Model for the New Zealand Economy

To achieve the principal objectives of economic policy and to solve the problems of transformation and adjustment, an understanding of the structure and the underlying characteristics of the economy is required. Such understanding is greatly enhanced if attention can be centered upon realistic relationships among strategic macroeconomic variables.

With these considerations in mind, a simple econometric model for the New Zealand economy is presented. The model is simple in that it consists of only four behavioral functions: one consumption function and three investment functions. The small number of equations arises from the construction of the model corresponding to the conventional macro-economic theory. The model is simple also for the reason that all of its equations are linear. Linear approximations to the functions are assumed mostly because of the relatively short time series underlying the model. In this short period any other trend may very well be approximated by a linear trend. The simplicity of the model has the advantage that it can gradually be extended to more complicated systems, noting which aspects of performance improve and which deteriorate and using this as a guide in the further development of the system. The choice for this particular type of model has been motivated by D. J. Smyth's analysis of the post-war Australian economy in "Investment, Growth and Trade Cycle", The Economic Record, June 1962 (14). The theoretical framework has been provided by J. R. Hicks in A Contribution to the Theory of the Trade Cycle (15).

Accelerator-Multiplier Mechanism

The model is designed to explain the dynamic characteristics of the economy by means of the accelerator-multiplier mechanism. The underlying determinants are thus the familiar consumption and investment relationships. While both the accelerator and the multiplier are linear relationships, they are also dynamic concepts. Together they constitute the basic transmission mechanism for economic growth. At the same time they also provide a self-contained theory of the business cycle explaining why cumulative increases and decreases in income come to an end, reversing themselves in the process. Using this model it is thus possible to work in deviations about a progressive trend in aggregate income.

The accelerator-multiplier mechanism should have several advantages as an explanatory value for the New Zealand economy. A model based on this mechanism works best in economies with full or near full employment of resources, i.e. where productive capacity is fully utilized. The insistance of full employment of resources in New Zealand should therefore be a significant factor improving the performance of the model. A further requirement for the satisfactory performance of the accelerator-multiplier mechanism is that each increase in demand for finished goods is regarded as permanent by entrepreneurs. In New Zealand this is partly achieved by direct government spending which constitutes a significant part of the total national expenditure aimed to promote a desired rate of economic growth and partly by steps taken to strengthen the instruments for economic policy formulation and planning. These measures lessen uncertainty and

create the opportunity for the generation of a continuous and increased flow of investment spending.

The interaction of the accelerator and the multiplier can lead to a variety of time patterns of aggregate income growth depending upon the numerical values of the parameters and the length of the time period over which they operate. The model can therefore be useful in classifying the economy according to its dynamic characteristics. Several alternatives are possible. The parameters may indicate an underlying economic structure of inherent stability with strong growth forces pushing aggregate income along an upward equilibrium path so that external disturbances are damped and readily absorbed. Or they may indicate an economy which even in the absence of outside shocks is inherently unstable producing cyclical fluctuations about its growth trend or tending relentlessly to diverge from it in a more or less explosive manner. Another alternative is that the economy emerges as a stagnant one where constant government support measures are required to keep it growing at a satisfactory rate.

Sources, Coverage, Quality and Treatment of Statistical Data

Time series underlying the model cover a recent period of 12 years. Most of the data used in the model were obtained from the New Zealand Department of Statistics in Wellington, New Zealand upon request. Although New Zealand appears to have a wealth of statistical information, all economic time series until recently have been published in current prices. Only since 1955 conversion to constant prices has been undertaken, but the

break-down for which this information is available is limited. The major adjustment was, therefore to deflate those series which were available in current prices only.

Time series in constant prices were available only for the major components of national expenditure: gross domestic income, Y, export receipts, X, import payments, M, personal consumption expenditure, C, and private disposable income, Yd. Government expenditure, G, and private investment, I were available in current prices only.

The price indices available were the consumers' price index and the wholesale price index. The latter was further disaggregated into an index for domestic and an index for imported commodities. These indices are given in Tables 9 and 10, all having 1954-55 as the base year. Indices prior to 1954 were not satisfactory mainly because price changes of certain commodity groups, especially services, were not taken account of. The latest indices were the best available, but even these, according to the Department of Statistics "at best can only be regarded as approximate indicators of price changes in particular account items".[1]

Statistical information received from Wellington was in the form of three official publications listed below. The coverage of data and their treatment are described next.

1. The Supplement to November 1968 Monthly Abstract of Statistics (16) contained time series in constant 1954-55 prices for the following components of national expenditure:

[1]Lewington, R.J. Wellington, New Zealand. Extracts from New Zealand Monthly Abstract of Statistics. Private Communication. 1969.

X - export receipts of goods and services,

X + Z - export receipts for goods and services corrected for the terms of trade,

M - import payments for goods and services, and

Y - gross domestic income, otherwise designated as effective gross domestic product.

The time period covered was March years 1954-55 to 1967-68.

Gross domestic income, Y, is the same as gross domestic product at 1954-55 prices to which a correction has been made to allow for the purchasing power in overseas markets of that portion which is exported. The correction is the same as that used to adjust exports of goods and services for changes in the terms of trade. The terms of trade effect, Z, was easily obtained as the difference between exports of goods and services corrected for the terms of trade, X + Z, and exports of goods and services, X.

2. The Supplement to October 1968 Monthly Abstract of Statistics (6) supplied the following time series:

G^c - government expenditure on goods and services,

G^i - government gross investment,

I^f - private gross investment in fixed capital, and

I^i - investment in inventories (change in stocks).

Statistical information for these series was in current prices covering a period from 1958-59 to 1967-68. Additional information extending back to 1954-55, also the latest wholesale index, were supplied on request from the Department of Statistics separately.

3. The Note of the Month (17) to the Monthly Abstract of Statistics 1968 contained the rest of the time series, also the consumers' price index. This source supplied:

per head disposable income at constant 1954-55 prices, and

per head personal consumption expenditure at constant 1954-55 prices.

This information was sufficient to calculate in constant 1954-55 prices gross personal disposable income, Yd, and private consumption, C.

Deflation of the series proved to be very difficult. The difficulty involved can be best explained by reproducing equation 1:

$$Y = C + I + G + Z - M + X$$

Since Y, C, Z, M, and X were given in constant prices, G and I represented residual quantities. Noting that each of these were disaggregated in two, there were four time series to be deflated and then added back into the equation. There were two deflators available: the consumers' price index and the wholesale price index (all commodities). It turned out, however, that when the deflated values were added back into the right hand side of the above equation, the sum of the components differed by some amount from Y, the value of which was already given in constant prices. Various combinations between the price indices and the series to be deflated were tried, but the results did not seem satisfactory. Finally, two new composite price indices were devised which enabled to minimize the deviations from Y.

The base was provided by the wholesale price index for imported commodities and the wholesale price index for domestically produced commodities. These are listed in Table 10. The import content and the domestic

Table 9. Consumers' price index base 1955 = 1000[a]

March Year	Index
1955	1000
1956	1023
1957	1061
1958	1083
1959	1143
1960	1169
1961	1180
1962	1206
1963	1234
1964	1261
1965	1311
1966	1350
1967	1391
1968	1451

[a]Source: (17).

Table 10. Wholesale price index for goods and services base 1955 = 1000[a]

March year	Domes-tic	Import-ed	All
1955	1000	1000	1000
1956	1054	1026	1038
1957	1046	1052	1050
1958	1070	1087	1080
1959	1082	1114	1097
1960	1094	1098	1100
1961	1086	1103	1097
1962	1077	1104	1090
1963	1077	1108	1092
1964	1109	1130	1120
1965	1165	1129	1160
1966	1195	1156	1188
1967	1211	1176	1206
1968	1240	1243	1247

[a]Source: (18).

content of government consumption expenditure and gross domestic capital formation were obtained from input-output tables for the New Zealand economy (19). For government consumption expenditures the figures for imported and domestic inputs were 17 per cent and 83 per cent, respectively. The corresponding figures for gross domestic capital formation were 27 per cent and 73 per cent. Using the two price indices and import and domestic content percentages as weights, a price index for government consumption and a price index for domestic capital formation were calculated. Since goods consumed by the government contain 17 per cent imported inputs and 83 per cent domestic inputs, the price index for government consumption expenditures was obtained a) by multiplying the wholesale price index for imports by .17, b) by multiplying the wholesale price index for domestic goods by .83, and c) by adding the results. Similarly, the price index for capital goods was obtained a) by multiplying the wholesale price index for domestic goods by .73, b) by multiplying the wholesale price index for imported commodities by .27, and c) by adding the two. The resultant indices for government consumption expenditures and gross capital formation are presented in Table 11.

Table 11. Weighted price index base 1955 = 1000[a]

March year	Government consumption	Capital goods
1955	1000	1000
1956	1049	1046
1957	1047	1048
1958	1073	1075
1959	1087	1098
1960	1095	1095

[a]Calculated from wholesale price index as described in the text.

Table 11. (Continued)

March year	Government consumption	Capital goods
1961	1089	1091
1962	1081	1084
1963	1082	1085
1964	1113	1115
1965	1159	1155
1966	1188	1184
1967	1205	1202
1968	1340	1241

The time series based on current prices were then deflated as indicated below:

G^c by the price index for government consumption expenditure,

G^i by the price index for capital goods,

I^f by the price index for capital goods, and

I^i by the wholesale price index (all goods).

This procedure yielded the closest approximation to the constant price values of Y as originally provided by the Department. Substituting above deflated time series back in equation 1, differences between the right hand side and the left hand side of the equation were obtained. These differences amounted to about 1 per cent of Y except for the years 1962-63 and 1966-67 when the error was 3.8 and 3.2 per cent, respectively. Discrepancies and errors are shown in Table 12.

Discrepancies were eliminated by distributing them among the four deflated components. In this manner they were added back or subtracted from the actual sum of the components. The distribution was proportional to the contribution of each of the four components to Y. This was

Table 12. Discrepancies between Y given and Y estimated after deflation

March year	Y given	Y estimated	Discrepancies	% error
1955	1877	1877	0	-
1956	1930	1922	8	.5
1957	1955	1969	-14	.7
1958	2039	2034	5	-
1959	2020	2030	-10	.5
1960	2189	2152	37	1.5
1961	2301	2310	-9	.5
1962	2334	2369	-35	1.5
1963	2429	2522	-93	3.8
1964	2644	2683	-39	1.5
1965	2856	2824	32	1.1
1966	2998	2942	56	1.8
1967	3127	3024	103	3.2
1968	2994	2998	-4	-

preferred to the alternative of changing the values of Y since it was clear that the discrepancies were due only to an imperfect deflator. Current, deflated and adjusted values for I^f, I^i, G^c and G^i appear in Table 13.

With regard to the quality of data underlying the present model official sources have stated that national expenditure components have to be used "with caution owing to the fact that not all items of expenditure can be estimated directly. On the other hand it is well to realize that whatever inherent error there may exist in the absolute values of individual expenditure items, year-to-year changes are likely to be much more accurate simply because the method of estimation remains the same" (8).

Macro-economic data underlying the model appear in Table 14.

Table 13. Current deflated and adjusted values for G^c, G^i, I^f and I^i

March year	G^c			G^i		
	current	deflated	adjusted	current	deflated	adjusted
1955	227	227	227	164	164	164
1956	249	237	240	187	179	180
1957	274	262	257	203	194	191
1958	287	267	269	214	199	200
1959	302	278	275	214	195	192
1960	324	296	309	226	206	217
1961	346	318	315	233	214	212
1962	363	336	322	241	222	215
1963	394	364	327	255	235	218
1964	417	375	361	286	257	249
1965	460	397	409	312	270	275
1966	516	434	456	342	289	298
1967	566	470	505	371	309	333
1968	591	477	476	375	302	301
	I^f			I^i		
	current	deflated	adjusted	current	deflated	adjusted
1955	277	277	277	58	58	58
1956	266	254	257	38	37	38
1957	256	244	239	20	19	18
1958	287	267	269	32	30	30
1959	290	264	261	31	28	27
1960	297	271	283	26	24	25
1961	366	335	332	45	41	40
1962	393	362	348	24	22	22
1963	387	356	319	35	32	30
1964	423	379	365	86	77	74
1965	500	433	445	97	84	87
1966	566	478	499	142	120	124
1967	592	493	529	138	114	122
1968	540	435	433	124	100	100

Table 14. Macro-economic data (in millions of New Zealand dollars) 1955 constant prices

March year	C	I	I^f	I^i	G	G^c	G^i
1955	1201	335	277	58	391	227	164
1956	1246	295	257	38	420	240	180
1957	1250	257	239	18	448	257	191
1958	1334	299	269	30	469	269	200
1959	1276	288	261	27	467	275	192
1960	1252	308	283	25	526	309	217
1961	1460	372	332	40	527	315	212
1962	1487	370	348	22	537	322	215
1963	1524	349	319	30	545	327	218
1964	1584	439	365	74	610	361	249
1965	1626	532	445	87	684	409	275
1966	1728	623	499	124	754	456	298
1967	1712	651	529	122	838	505	333

	X	Z	M	Y_d	T	Y	Y	%
1955	507	0	557	1369	508	1877		
1956	568	-16	583	1413	517	1930	53	2.8
1957	592	-29	563	1434	521	1955	25	1.2
1958	596	-48	611	1525	514	2039	84	4.3
1959	663	-125	549	1420	600	2020	-19	-0.9
1960	680	-41	536	1566	623	2189	169	8.4
1961	658	-66	650	1641	660	2301	112	5.1
1962	707	-112	655	1636	698	2334	33	1.4
1963	738	-92	635	1774	655	2429	95	4.1
1964	783	-31	741	1898	746	2644	215	8.8
1965	769	18	773	1953	903	2856	212	7.9
1966	797	-13	891	2027	971	2998	142	5.0
1967	841	-8	907	2032	1095	3127	129	4.3

Methods of Estimation

Regression equations have been estimated by simple least squares. Although some bias may be introduced, especially where nonlagged endogenous variables are involved, least square estimates were preferred to the more sophisticated limited information maximum likelihood method because of the smallness of the sample size. Limited information estimates are

themselves unbiased only when the sample size is large.

Reliability of each equation is assessed by subjecting the standard errors of the estimated parameters to the t test. Coefficients with * are significant at the 1 per cent level of probability, with ** at the 5 per cent level of probability and with *** at the 10 per cent level.

The figures in parentheses under the regression coefficients are the standard errors associated with the estimates. R^2 denotes the value of the coefficient of multiple determination adjusted for the degrees of freedom. A test for autocorrelation suggested by Durbin and Watson (DW) is used. With the sample sizes of 15 and a single independent variable, a value of DW below .81 indicates significant autocorrelation at the 2 per cent level of significance. A value of DW above 1.07 indicates serial independence while a value of DW between .81 and 1.07 yields inconclusive results. For equations with two independent variables the corresponding limits are .70 and 1.25, respectively.

When residuals are autocorrelated, little significance can be attached to the standard errors of the regression coefficients. However, despite the presence of autocorrelation or large standard errors an estimated equation may be valuable for prediction purposes if the coefficient of correlation is high because R^2 equals the proportion of changes in the dependent variable that are explained by the independent variables.

Structural Relations

In terms of structural relations the model assumes the following mathematical form:

$$Y_t = C_t + I_t + G_t + Z_t - M_t + X_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (1)$$

$$C_t = a_c + b_c \, Yd_{t-1} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (2)$$

alternatively

$$C_t = a'_c + b'_c Yd_t \quad \text{.....(2a)}$$

$$I_t = a_i + b_i (Y_{t-1} - Y_{t-2}) + c_i t \quad \text{.....(3)}$$

$$I^f_t = a^f_i + b^f_i (Y_{t-1} - Y_{t-2}) + c^f_i t \quad \text{.....(4)}$$

$$I^i_t = a^i_i + b^i_i (Y_{t-1} - Y_{t-2}) + c^i_i t \quad \text{.....(5)}$$

$$Yd_t = Y_t - T_t \quad \text{.....(6)}$$

$$I_t = I^f_t + I^i_t \quad \text{.....(7)}$$

$$G_t = G^c_t + G^i_t \quad \text{.....(8)}$$

The symbols represent the following variables expressed in millions of New Zealand dollars in constant 1954-55 prices:

Y - gross domestic income,

Yd - gross personal disposable income,

C - private consumption,

I - private gross investment (capital formation),

I^f - private gross investment in fixed capital (investment by firms and purchases of houses by consumers),

I^i - investment in inventories, including farm stocks,

G - government expenditure,

G^c - government expenditure on goods and services,

G^i - government gross investment (capital formation),

X - export receipts,

Z - terms of trade effect,

M - import payments,

T - direct and indirect taxes less transfer payments,

t - time period of one year, and

t-1 - time lag of one year.

The over-all economic activity is summed into gross domestic income (Y) rather than in gross national product (GNP) because of the relative importance of the terms of trade effect (Z). The inclusion of net factor transfers to the rest of the world which averages only to about 1 to 2 per cent of Y is omitted.

Consumption Function

Private consumption is regressed on gross personal disposable income (Yd) lagged one period. This yields the following relationship

$$C_t = \underset{(111.1)}{187.53^{***}} + \underset{(.07)}{.77^{*}}\ Yd_{t-1} \quad \ldots\ldots\ldots\

The time lag of one period means that consumption decisions are based upon previous rather than current levels of disposable income. This agrees with the view that households take time to adjust spending to new levels of income over the cycle (see (15), (20), and (21) for analysis of household behavior). In short, with the onset of a depression, which lowers disposable income, consumers are willing to save less, or even dissave, in order to try to maintain past living standards. During periods of business revival, the prerecession living levels are still influential, and the rate of saving grows with consumption spending, increasing less than disposable income. However, once the previous peak of disposable income is surpassed, consumers are feeling richer and more sure of themselves, consequently increasing their spending at a more rapid rate which slows down the tendency of savings ratio to grow.

More important lags, however, are thought to occur in the consumption of non-wage incomes: salaries and profits (see Hicks in (15) and Tinbergen in (22) Here the time lags arise 1) because of the length of time which elapses between the effective earnings of income and its passage into the control of the consumer, and 2) because of the length of time between the consumer's acquisition of spending power and his utilization of it. According to Hicks, "the former is largely a matter of accounting necessity, which causes delay between earning of profits and their ascertainment, and between ascertainment and distribution. The latter is mainly a matter of deliberate equalization by the consumer himself, who will ordinarily make some effort to ensure that his expenditure does not fluctuate to the same degree as his income fluctuates". Professor

Tinbergen finds on British data that non-wage consumption usually lags behind income one to one-and-a-half years.

The multiplier, $\frac{1}{1 - b_c}$, together with the accelerator, determines the time shape of the movement of Y. A given value of the multiplier, however, can lead to a radically different growth pattern depending upon the income period (the time it takes for that part of income which is spent on consumption to go through the economy and once again become income) over which the parameter operates. Thus while in the absence of consumption lags fluctuations in aggregate income would be a magnification of fluctuations in autonomous expenditure, lags in consumption tend to damp down the fluctuations in income. If the lags are complex and their length quite considerable the dampening effect may be quite large. These relations are explained in detail by Hicks in the Appendix to (15), also by Alexander in (20).

There is no doubt that in practice the response of consumption to changes in income is lagged. The difficult and important problem is to determine by how much. The time lag of one period in the above consumption function is quite arbitrary. For reasons just given, it is thought to represent a more realistic relationship than a relationship where time lags are not recognized at all, that is where it is assumed that the response of consumption to changes in income is instantaneous. While the neglect of the income period will lose from sight important dynamic characteristics of the system, overestimation of the time lag will act to distort them. Determination of the actual length of the income period is, therefore, a matter of real importance and will do much to improve the

predictive and explanatory qualities of the model.

Investment Function

Although quantitatively less important than consumption, investment plays a crucial role in determining the level of economic activity. Historically, most fluctuations in national income and employment have been triggered off by fluctuations in investment spending, and the speed and character of economic growth have been intimately related to the volume of capital formation which investment spending determines. Economic analysis reveals that there are two principal determinants of the amount of investment spending: the marginal efficiency of capital and the rate of interest. The marginal efficiency of capital reflects the prospective profitability of investment, and the rate of interest denotes the financial cost of investment. The former is expressed as a rate of return on the purchase price of assets, the latter as a rate of return on borrowed or internal funds. Investment in the economy should proceed to the point where the aggregate marginal efficiency of capital comes into equality with the prevailing rate of interest.

Underlying the two principal determinants are a host of explanatory variables which have to be introduced and analyzed before the theory of investment spending can become more useful. One has to deal with factors influencing the expectations of businessmen regarding the future stream of returns resulting from added capital equipment. Attention must be paid to the process of innovation and technological change, to the impact of population movements and their variables. There are institutional in-

fluences to be taken care of, such as the structure of product markets and government activities. The structure and practices of money and capital markets are very important and often determine whether investment can be financed. Finally, the general level of economic activity and the rate of growth of national income add their influences, making the analysis of investment a very complicated and difficult process.

The incorporation of all explanatory variables in a complex investment function would require very detailed statistical information which is not available in New Zealand at the present time. Even if this information was available, it is doubtful that investment could be explained in a satisfactory way because of the controlled nature of market forces. To the extent that econometric testing has been undertaken in New Zealand no satisfactory investment function has been obtained. In a study by A. D. Brownlie, no significant influence on investment is found evey by such well recognized investment determinants as profits and the rate of interest. (For details see (23) and (24)).

This model, therefore, uses a different approach. Explicit differentiation is made only between induced and autonomous investment and the relation between the two is then used to analyze the dynamic characteristics of the system, specifically, the stability of aggregate income growth.

This is the relationship obtained:

$$I_t = \underset{(30.70)}{172.60^{*}} + \underset{(.26)}{.41^{***}} (Y_{t-1} - Y_{t-2}) + \underset{(6.00)}{32.22t^{*}} \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (10)$$

$$R^2 = .90$$
$$DW = .775$$

.41 estimates the accelerator associated with the time lag of 2 periods. The coefficient of "t", estimated at 32.22, indicates the linear growth rate of autonomous investment. The realiability of the estimated parameters is reflected in a high R^2 according to which 90 per cent of the changes in total private investment are explained by the independent variables. The values of the DW statistic is well above the limit which indicates autocorrelation, but within the range for which the test is inconclusive.

In the above function induced investment is represented by the Y component. Time lag in the function reflects the behavior of the businessmen who base part of their investment spending on income changes of recent past. When aggregate income increases, profits increase, and the base for induced investment spending is created. Projects which could not be previously undertaken, may now be realized. Certain investment decisions are considered induced and therefore the more reliable component of the total investment because they are related to and virtually compelled by past increases in income. They are undertaken by firms that experience the pressure of rising demand. These firms produce or expect soon to be producing in conditions of steeply rising marginal costs, and feel that they have to expand if they are to keep their share of the total market.

It is the accelerator, b_i, together with the multiplier, that determines the time shape of the movement of Y. Again, the time period over which the accelerator operates (in this case the investment period) is of crucial importance, imparting stability or instability to the system (for detailed discussion see (15) and (20). It is unrealistic that

all investment induced by an increase in aggregate income should be achieved in a single year following the increase in aggregate income. A slower process is more likely, so that a given year's increase in aggregate income may initiate a series of investment outlays which will be spread over several years. In the investment function above, induced investment is made directly dependent upon changes in aggregate income between two consecutive, previous time periods (t-1 and t-2). This is an arbitrary approximation to the unknown real response. Knowledge of the actual investment period would make the model more useful.

In a mature economy induced investment in response to increasing costs of production may cover many industries, but it is ordinarily small in any one year in relation to existing capacity. The big dynamic change originates in autonomous investment which is represented in the function by the "t" component. The rate of growth of autonomous investment is an independent variable which determines the rate of growth of the whole system. Autonomous investment consists of public investment, investment in response to inventions, long-range investment which is expected to pay for itself over a long period and other investment which is not directly related to the level or changes in aggregate income. A broad variety of factors such as changes in population and technology, geographic opportunities, government tax and expenditure policies, developments in external markets (very important for New Zealand), movements in aggregate income and output, changes in money and capital markets influence expectations about long-range profitability and determine the flow of autonomous investment.

A steady flow of autonomous investment tends to dampen any fluctuations in induced investment and act to stabilize the rate of growth of aggregate income (for stability implications see Hicks' treatment of higher-order non-homogeneous difference equations under "The Regularly Progressive Economy with Autonomous Investment" in the Appendix to (15)). The preponderance of autonomous investment makes it possible for adjustments to excessive or deficient growth in the labor force, for the economizing of scarce raw materials and for the application of advances in technology and invention. The proper flow of autonomous investment is therefore, of great importance. Without it instability would be on the increase and the growth of the economy would soon come to a stop.

Exogenous Variables

Government consumption and capital formation (G) appear in the model as exogenously determined. This is the usual practice since the extent of government expenditure is determined outside the system by the wish to achieve desired economic and social objectives. These objectives are derived mostly through the political process.

Export receipts, (X), and the terms of trade effect, (Z), are also clearly autonomous. Access to foreign markets, especially outside Britain, and the prices obtained there are mostly influenced by factors other than domestic aggregate income. Export receipts and the purchasing power they represent are some complex function of economic conditions overseas over which New Zealand can not exercise any noticeable influence. Furthermore,

some exports are controlled domestically. The Export Prohibition Regulations of 1953 limit the export of essential goods in short supply, of goods on which subsidies have been granted, and of goods shipped to strategic destinations (25).

In search for an import function, imports, (M), were regressed alternatively on consumption, investment and the terms of trade effect. Various combinations failed to yield significant results. This was thought to be due to the extensive use of import licensing and tariffs which distort the import function. In New Zealand import control regulations have been arbitrarily imposed for quite some time in order to insure that overseas debt services would be met and sufficient funds be available for essential imports. For these reasons imports were included in the model as an exogenous variable.

Reduced Form of the Model

Substituting the estimated regression equations for consumption and investment in equation 1, the following reduced form of the model is obtained:

$$Y_t = 360.13 + 1.18\, Y_{t-1} - .41 Y_{t-2} + 32.22t + G_t - .77 T_{t-1} + X_t + Z_t - M_t \quad \ldots\ldots (11)$$

Gross domestic income here is a function of the lagged values of itself, of the autonomous investment which has a linear trend and of variables G, T, X, Z, and M taken as exogenously determined.

The reduced form of the model can be used to generate estimates for gross domestic income. This is done for each of the sample years by

substituting the values for the independent variables in the reduced form equation 11. The resulting values are presented in Table 15 side by side with actual values. On the basis of these the predictive quality of the model can be tested. This is done graphically in Figure 1 where the actual behavior of aggregate income is contrasted to that predicted by the model. In this figure Curve 1 represents actual values, curve 2 represents the estimated values. It can be seen that the values predicted by the model give a relatively good fit. This follows from the fact that each of the estimated equations explain at least 90 per cent of the variations. These equations and therefore the model can be expected to provide a reasonable basis for explanation and forecasting.

It can be seen that the values generated by the model exhibit larger than actual fluctuations. The dampened nature of the latter can be attributed to the ability of the government to foresee and counteract the behavior of Y. This is quite evident in the second-half of the sample period.

Table 15. Actual and estimated values of Y in millions of constant 1955 NZ dollars

March year	Y actual	Y estimated
1957	1955	1957
1958	2039	1952
1959	2020	2129
1960	2189	2211
1961	2301	2273
1962	2334	2348
1963	2429	2423
1964	2644	2653
1965	2856	2907
1966	2998	2930
1967	3127	3108

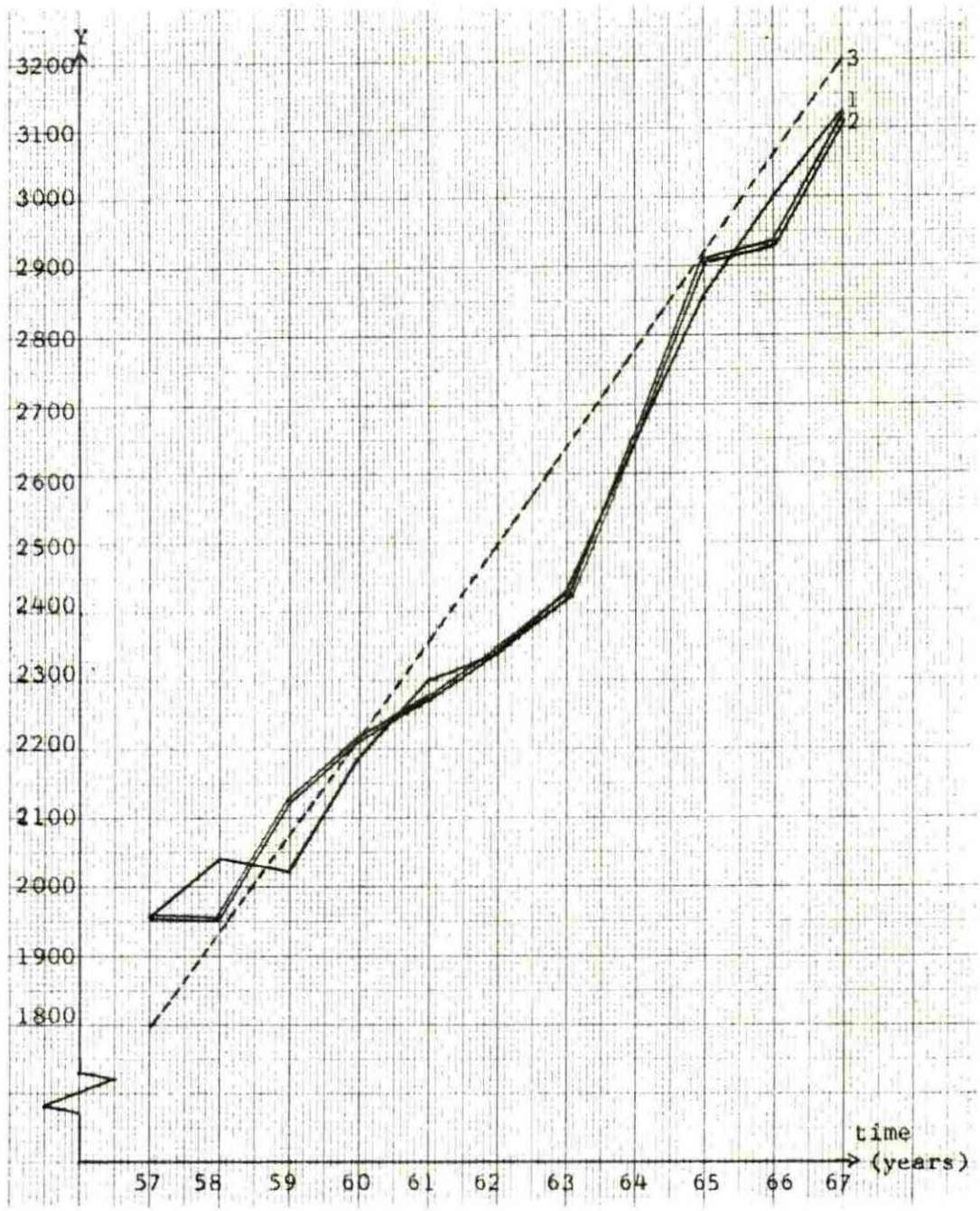

Figure 1. Actual, estimated and equilibrium values of Y
1 - actual
2 - estimated
3 - equilibrium

The Equilibrium Path of Aggregate Income

Equation 11 can be simplified by assuming that there are no exogenous disturbances impinging upon the system. In econometric testing this corresponds to a situation where the sum of all exogenous variables is kept constant over the period of observations. Averaging the individual sums of $G_t - .77T_{t-1} + X_t + Z_t - M_t$ for the present model over the 13 year sample period and adding the average thus obtained ($34 million) to the intercept term of equation 11 the following relationship is obtained:

$$Y_t = 394.13 + 1.18Y_{t-1} - .41Y_{t-2} + 32.22t \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (12)$$

This equation reveals more clearly the basic dynamic characteristics of the system. It is a second-degree non-homogeneous difference equation which contains an independent linear function for the growth of autonomous investment. Because the trend rate of growth of autonomous investment is constant, progressive equilibrium is possible. It is clear that the equilibrium rate of growth of the system is determined (via the multiplier) by the rate of growth of autonomous investment. Since the multiplier equals 4.35 (from equation 9), and the rate of growth of autonomous investment is $32.22 million per year, the equilibrium rate of growth of aggregate income for the present model is 4.35 times $32.22 million which equals $140 million per year in absolute terms. This is the amount by which Y will increase each year if initially Y_{t-1} and Y_{t-2} would differ by 140 million, that is, if the system had been completely adjusted to a progressive equilibrium. If this is exactly achieved, the system will

perpetuate itself until disturbed by an outside shock. Curve 3 in Figure 1 and curve 1 in Figure 2 represent such an equilibrium growth path corresponding to initial conditions: $Y_2 = 1636.41$, and $Y_1 = 1496.41$.

Stability Implications

Conditions for aggregate income to grow at a steady rate are very restrictive. Induced investment must be such as not to engender peaks and troughs which means that capital stock should be adjusted to current output and should fall due for replacement at the right dates. This is hardly to be expected in New Zealand. Furthermore, the summary impact of the changes in exogenous variables will not be neutral. While over the sample period government taxation revenue and government expenditure have remained at a relatively constant proportion of the GNP, large variations have persisted in the foreign trade sector caused by sharp fluctuations in export earnings, (X), and the terms of trade effects, (Z). To a degree these disturbances can be mitigated by external borrowing, import control and other corrective measures, but their total impact can not be avoided. In fact, fluctuations in foreign trade sector have been the major source of difficulties in achieving and maintaining a satisfactory rate of economic growth in New Zealand.

The consequences of a displacement from the equilibrium path can have five alternatives: a) a steady convergence without fluctuations back to the equilibrium path, b) a cyclical convergence involving damped oscillations, c) regular oscillations about the growth trend, d) explosive oscillations, and e) an explosion without fluctuations.

In (15), Hicks provides a simple criterion based on the properties of second-order homogeneous difference equations with consumption lag of one period for judging economic stability according to the above five cases. This criterion can also be applied to the homogeneous part of a non-homogeneous difference equation and can therefore be used to investigate the consequences of a displacement from its equilibrium path of Y as defined by equation 12. The criterion is defined in terms of the marginal propensity to save, s, and the accelerator. If the accelerator has a value smaller than $(1 - \sqrt{s})^2$ alternative "a" will obtain. If the value of the accelerator is between $(1 - \sqrt{s})^2$ and 1, alternative "b" characterizes stability. The value of the accelerator exactly equal to 1 will cause alternative "c" to take place. If the accelerator happens to fall within the range between 1 and $(1 + \sqrt{s})^2$, alternative "d" will apply and finally, if the value of the accelerator is larger than $(1 + \sqrt{s})^2$, alternative "e" will be the result.

For the present model s = .23 (from equation 9), whence $(1 - \sqrt{s})^2$ = .27 and $(1 + \sqrt{s})^2$ = 2.19. The value of the accelerator = .41 falls therefore within the range between $(1 - \sqrt{s})^2$ and 1 for which the alternative "b" applies. Accordingly, any disturbance in the equilibrium growth rate of Y should result in damped fluctuations about the growth trend to which the income should tend to settle down. There may be one or two considerable oscillations, but as time goes on the amplitude of these will tend to fade out.

In order to test the actual performance of the model and to verify that damped oscillations indeed will take place, a simple computer ex-

periment was designed and performed on equation 12. Given initial conditions, the experiment was designed to yield consecutive values of Y_t for $t = 0$ to $t = 30$. First, the growth sequence was started off with initial values $Y_1 = 1496.41$ and $Y_2 = 1636.41$ corresponding to equilibrium values. The resulting path traced out by Y is represented by curve 1 in Figure 2. Its time shape is a straight line and represents the progressive equilibrium rate of growth of $140 million per year. Then a disturbance was simulated by arbitrarily setting the initial values to $Y_1 = Y_2 = 1200.00$, that is, by displacing them below the corresponding equilibrium values. The consequent behavior of Y is depicted by curve 2 in Figure 2. The corresponding numerical values and their increments are listed in Table 16 under "lagged consumption". The dampening nature of the oscillations is quite apparent. Aggregate income, after being displaced from its equilibrium values, begins to grow at a rate higher than the equilibrium rate, slightly overshoots the equilibrium path, then settles down to it and continues to grow along it. There is practically only one oscillation and the process of adjustment is very rapid. This result thus agrees with the earlier conclusion based on Hicks' criterion.

It can be noted that overestimation of the accelerator and the marginal propensity to consume (1 - s) tends to have offsetting effects. If the true value of the accelerator were smaller than the estimated value, the possibility of oscillations would be diminished as the system would move away from the critical value dividing stability and instability. If the true value of the marginal propensity to consume were smaller than the estimated value, the possibility of oscillations would be increased.

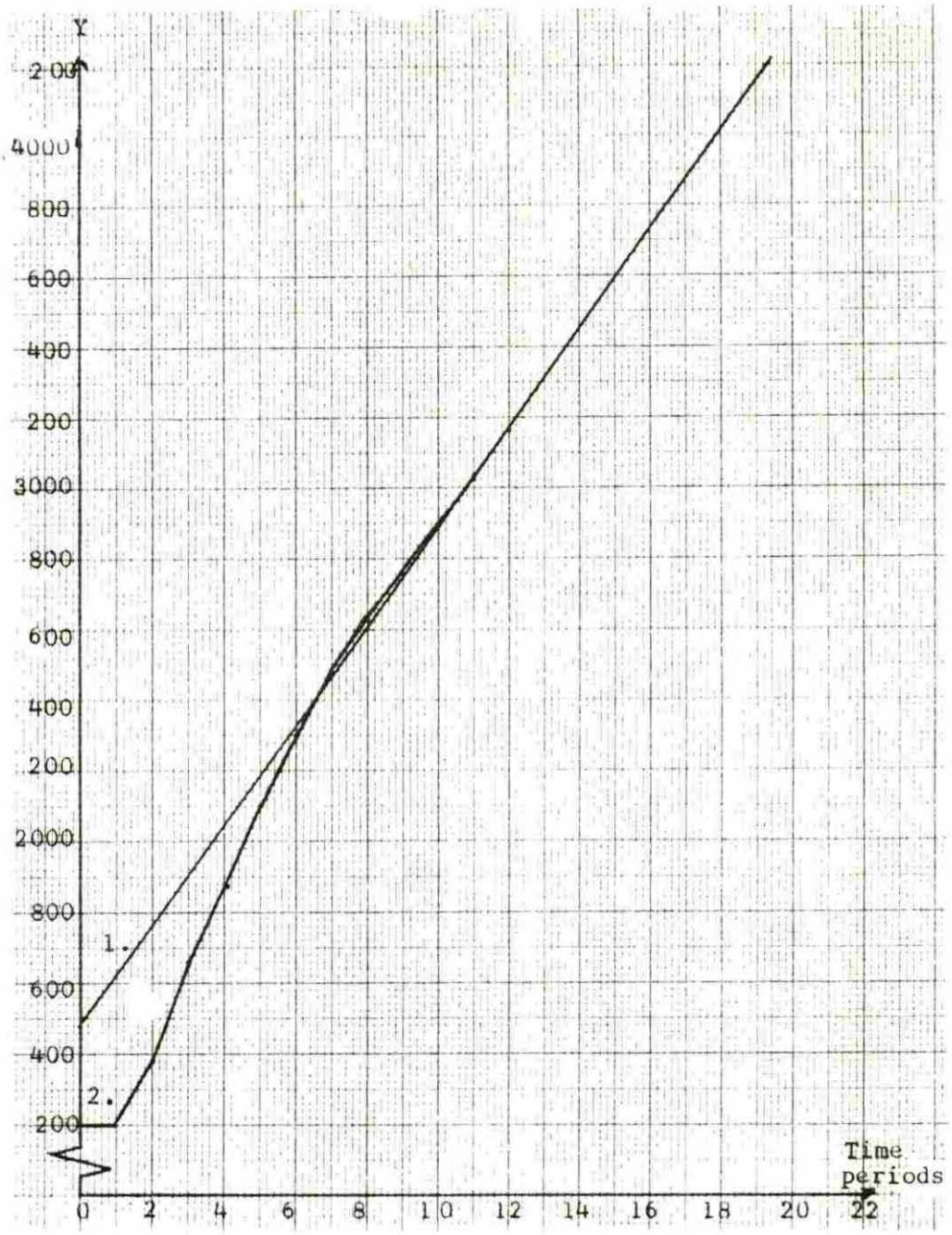

Figure 2. Path traced out by Y_t in $Y_t=394.13+1.18Y_{t-k}-.41Y_{t-2}+32.22t$ with initial conditions
Curve 1 $Y_2 = 1636.41$, $Y_1 = 1496.41$
Curve 2 $Y_1 = Y_2 = 1200.00$

Table 16. Experimental values of Y_t and its increments $Y_t - Y_{t-1}$ (rounded)

t	Lagged consumption		Non-lagged consumption	
	Y_t	$Y_t - Y_{t-1}$	Y_t	$Y_t - Y_{t-1}$
0	1200		1540	
1	1200	0	1540	0
2	1382	182	1692	152
3	1630	247	2070	378
4	1880	249	2570	499
5	2105	225	2898	328
6	2300	195	2745	-152
7	2471	170	2086	-659
8	2625	153	1383	-702
9	2768	143	1441	58
10	2906	138	2818	1377
11	3043	136	5110	2291
12	3180	136	6739	1628
13	3317	137	5780	-958
14	3456	138	1666	-4114
15	3595	139	-3379	-5046
16	3735	139	-4779	-1400
17	3875	140	1329	6108
18	4015	140	13772	12443
19	4155	140	24290	10517
20	4295	140	21260	-3929
21	4436	140	-827	-22088
22	4576	140	-31954	-31127
23	4716	140	-46650	-14695
24	4856	140	-19573	27077
25	4996	140	49062	68636
26	5136	140	117348	68285
27	5276	140	116902	-445
28	5416	140	4311	-112590
29	5556	140	-179476	-183788
30	5696	140	-296111	-116635

Similar reasoning applies to the underestimation of both parameters.

Concerning the stability of the system it must be also noted that equation 12 somewhat exaggerates the degree of instability mainly because it ignores such automatic stabilizers that exist. While they can not

reverse the direction of the movement in the growth rate they will tend to moderate the decline in the rate of growth and will tend to lessen the rise in the growth rate. If imports were included as an endogenous variable, they too would lessen the speed with which the rate of growth of aggregate income departs from its equilibrium value.

Accelerator and the Incremental Capital-Output ratio

The size of the accelerator indicates the degree of response of investment to the present level of aggregate income or to its changes of recent past. As such the accelerator is a short-run concept. The incremental capital-output ratio is relevant for the capacity effects of investment in fixed capital regardless of whether such investment is induced or autonomous. It is a technological relationship indicating the extent to which the fixed capital stock should be increased for capital stock to be appropriate for the production of increased level of output. Since investment in fixed capital is based mainly on future expectations the incremental capital-output ratio is a long-run concept and is applicable to the growth of aggregate income over a considerable period of time.

The accelerator is always numerically smaller than the incremental capital-output ratio. This discrepancy in size can exist because autonomous investment enters into the calculation of the incremental capital-output ratio but not in the calculation of the accelerator. If most investment is autonomous, accelerator will be relatively small and disturbances in aggregate income may result in damped fluctuations. If for some reason part of autonomous investment becomes induced (long range investment plans

are revised downwards), the size of the accelerator will increase, approaching that of incremental capital-output ratio, and a previously stable situation may become unstable. Within this context the incremental capital-output ratio is a long-run accelerator and has stability implications of its own.

One study based on national income and productivity data for the five years ended March 1965 estimates the incremental capita-output ratio for New Zealand at 3.11 (26).

Lagged versus Non-lagged Consumption

Importance of the knowledge of actual consumption lags was emphasized earlier, indicating that lagged consumption tends to dampen down fluctuations in income. To see what difference a non-lagged consumption function would make to the present analysis an experiment was performed in which the models consumption function, equation 9, was replaced, ceteris paribus, by

$$C_t = \underset{(89)}{177.99^{***}} + \underset{(.05)}{.75^{*}}\ Yd \quad \ldots\ldots\ldots\

Then a disturbance was simulated by means of a computer experiment similar to that performed before. The resulting time shape of aggregate income is in sharp contrast to that obtained when lagged consumption was specified. Instead of fluctuations fading out and aggregate income settling down to its equilibrium path, aggregate income continues to move away in ever increasing explosive oscillations. The explosive nature of the disturbed growth path can be best judged from the experimental values of Y and their increments presented in Table 16 under "non-lagged consumption".

Both consumption functions appear to have equal econometric validity, yet their inclusions in the model lead to diametrically opposite stability conclusions. This emphasizes the crucial importance of a priori reasoning as a basis of choosing the type of equation to be adopted. "The propensity for one or more economic time series, chosen at random, to show co-variation, as well as often-quoted nonsense correlations between unrelated phenomena endorses the rejection of a trial and error processing of all possible relationships between two or more series" (23). The a priori reasons which lead to the adoption of a single time lag in the initial specification of consumption relationship for this model have been explained at length in the text above.

Cycles and Stability

If the estimated parameters are such that alternative "b" applies, as in the present case, a single disturbance can not produce fluctuation

in Y such as have been actually observed (see curve 1 in Figure 1). There is no contradiction, however, since in reality the economy is exposed to relatively thick succession of exogenous shocks in such a way that the impact of one is still alive when the other happens. There is an interaction among fluctuations generated and a variety of results are possible. The oscillations may reinforce or weaken each other giving rise to longer periods of growth above or below the equilibrium rate predicted by the model. In these cases one may think of the economy as moving along a transient rather than along the equilibrium path. What really happens is explained by the "erratic shocks theory" postulated by R. Frisch in (27). This theory is capable of considerable elaboration in terms of modern probability. It explains how a system which is inherently stable and which tends to dampen individual disturbances may nevertheless generate fairly regular cycles or other movements without an apparent tendency for aggregate income to converge to its equilibrium path if it remains exposed to continuous series of individual shocks.

Examination of curve 1 in Figure 1 indicates that up to 1963 New Zealand's gross domestic income, on the average, has grown at a much slower rate than that predicted by the model. After 1963 the rate of growth has somewhat improved. This can be correlated with the behavior of foreign trade variables, especially the variations in the terms of trade effect. While the output of the economy grew steadily up to 1963, deterioration in export prices reduced the benefits of increased production and depressed the rate of growth of aggregate income. The sharp movement in export prices in 1964 and 1965 improved the terms of trade considerably in those

years as compared with earlier years and led to an increase in economic growth. In the last two years a downward trend in the terms of trade has somewhat slowed down the overall rate of growth, adjusting it more closely to the model's equilibrium rate.

Heterogenous Nature of Investment

Model's investment equation 10, distinguishes only between autonomous and induced investment but does not recognize explicitly investment in fixed capital, I^f, and investment in inventories, I^i. Without this distinction important insights into the actual investment structure are not possible and much less can be said about the real source of instability and the exact adjustment process following a disturbance. What is needed is the knowledge of the size of separate accelerators for each of the above investment categories.

It is sometimes conveniently assumed that the fixed capital accelerator is so much more important than the inventory accelerator that the role of inventories can be simply ignored. Recent investigations of investment structure in Australia and the United States, however, have yielded inventory accelerators which are about twice as large as the corresponding fixed capital accelerators (see the findings of D. J. Smyth in (14) and (28). Inventory accelerator in Australia is found to be very significant and actually more than twice the size of fixed capital accelerator, so that when the equilibrium of aggregate income is disturbed, the largest effect of adjustment is on inventories.

Furthermore, autonomous investment is found to be confined entirely to fixed capital investment. Accordingly, "models involving the interaction of the multiplier and the accelerator should emphasize the inventory accelerator more than they usually do and should not regard it as being unimportant compared with fixed capital accelerators" (28).

To look at the situation in New Zealand, separate regressions for I^f and I^i were run. These are the functions obtained:

$$I^f = \underset{(19.6)}{182.95^{*}} + \underset{(.6)}{.28^{**}}\,(Y_{t-1} - Y_{t-2}) + \underset{(3.8)}{23.57t^{**}} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (15)$$

$$R^2 = .92$$

$$DW = .995$$

$$I^i = \underset{(13.3)}{-10.35} + \underset{(.12)}{.13}\,(Y_{t-1} - Y_{t-2}) + \underset{(2.6)}{8.64t^{*}} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (16)$$

$$R^2 = .79$$

$$DW = .853$$

The size of the DW statistics yields no conclusive evidence as to the autocorrelation of the residuals. Ninety-two per cent of the variance of investment in fixed capital and 79 per cent of the variance of investment in inventories are explained by the independent variables. The autonomous component of investment in both equations shows a significant upward trend. About 25 per cent of autonomous investment is confined to inventories, the remaining 75 per cent to fixed capital investment. There is no significant induced component in inventory investment. Induced component of fixed-capital investment is significant only at the 10 per cent level of probability.

These results are not satisfactory because no significance can be attached to the inventory accelerator. Distortion of the function is thought to arise mainly from the inclusion of farm stocks into inventory investment. In New Zealand all major farm products (dairy products, meat, wool) are handled by various marketing boards and commissions through which the government acquires complete monopoly in marketing. This is a by-product of the introduction of guaranteed prices. Large stocks of farm products are accumulated and then disposed of at the discretion of the government and not in response to the changes in income. For this reason farm stocks should be really separated from non-farm inventories and treated as completely exogenous. If this could be accomplished, inventory accelerator should become significant and increase in size, since it is the usual practice of businessmen in New Zealand to adjust their inventories in response to changes sales (income). The coefficient of the autonomous part of inventory investment should at the same time diminish in size and significance. And since the two functions are complementary, i.e. since they add up to total private investment, the increase in the value of inventory accelerator would lead to a decrease in the value of fixed capital accelerator. Similarly, a decrease in the value of autonomous inventory coefficient would correspondingly increase the size of the autonomous fixed capital coefficient. This may then very well result in a set of coefficients according to which most of fixed capital investment would be autonomous rather than induced, and most of the inventory investment would be induced rather than autonomous.

While at present the explanatory use of the above two investment functions is not great because of the lack of appropriate time series, the method illustrates how, within this simple framework, the nature and stability of aggregate income path may be studied more fruitfully.

STRATEGY OF ECONOMIC DEVELOPMENT

The Basic Problem

It was shown that New Zealand has developed a high degree of international specialization and dependence on pastoral products. Stimulated by a stable market in the United Kingdom the most efficient way of maintaining a grassland-rich and population-scarce economy has been land and capital intensive pastoral agriculture. But over-dependence on exports of a small number of primary commodities has been also New Zealand's basic weakness. With a high standard of living and a large import bill, New Zealand has remained most vulnerable to changes in prices of a few export commodities.

As already emphasized in the text and indicated by the model the behavior of export receipts and import payments have been responsible for fluctuations in aggregate income and the slowing down of its rate of growth in the past. Presently, New Zealand seems to be facing a long-term decline in export earnings: for wool because of a replacement by synthetics, and for dairy products because of a danger of losing the preferential market in the United Kingdom. This may result in a large balance of payments deficit and endanger New Zealand's economic growth and prosperity for the future.

The need to transform in response to the changing world has been long recognized. But the main orientation of such development has not been to diversification of exports. Instead the processing of a wide range of products for the small domestic market has been encouraged with little regard to considerations of cost and comparative advantage. Sheltered by

the quantitative restriction on imports, which have been maintained to safeguard the balance of payments, but which have in fact been serving as a protectionist instrument, most industries operate at high costs and on a small scale. The industrialization policy oriented mainly towards the protected home market has created employment opportunities and additional income, but has led to little net savings in imports or to growth in exports. Thus there is a situation where a small pastoral labor force earns the bulk of foreign exchange while a large industrial labor force contributes practically nothing to exports, all of its products being consumer goods, for the home market. And, the primary industry labor force is falling relatively and absolutely. In addition to the labor resources a considerable part of capital is also tied up in activities which have made an insufficient contribution to the removal of the balance of payments deficit. In this respect a good deal of industrial development in the past represents a misallocation of resources. There is no effective criterion to replace the market mechanism of resource allocation and if New Zealand continues to develop on the same lines as in the past, she is likely to face serious balance of payments difficulties, which could then become a major constraint on the future growth of production and employment.

The earlier presentation of the characteristics of the New Zealand economy and the analysis of its parameters as disclosed by the model will now be used to propose a strategy of economic development for the future, consistent with the achievement of a stable rate of economic growth, balance of payments equilibrium and full employment. While realizing that there is some overlapping, the proposed strategy will be in two parts,

consisting of 1) measures to improve competition and the allocative efficiency of the price system and of 2) measures to stabilize and increase the flow of autonomous investment. As indicated earlier, the functioning of the price mechanism is essential for the economy to change in an economic manner in response to external stimulae. Also, for reasons already explained an increased flow and dominance of autonomous investment is needed to ensure that transformation is stable, that the effects of external disturbances are minimized and that a high rate of aggregate income growth can be maintained.

Measures to Improve Competition

In order to strengthen the reallocative mechanism of the price system the most important single measure should be to make New Zealand manufacturing internationally competitive by its gradual exposure to competition from imports. Exposure of domestic industries to import competition would tend to restore the link between decision making and incentives and induce managers to direct capital and human resources to those activities which could make a significant contribution to an increase of exports or to import substitution at competitive prices. This will increase the application of advanced technology and dynamic marketing methods. Exposure to international competition had made New Zealand's agriculture highly competitive and advanced by encouraging the use of technological innovations, research facilities and human potential. If industry were exposed to international competition and if industries based on advanced technology

were encouraged, then the potential skills embodied in a well-educated population could be realized in industry to the same extent as in agriculture. Only if the industrial sector becomes internationally competitive can the base of the New Zealand economy be strengthened by diversification of production and can the dependence of the balance of payments on a few primary export commodities be reduced. To accomplish this, manufacturing must selectively concentrate on those products which can be produced at competitive prices. This could lead to the start of a number of heavy industries based on the technological potential embodied in New Zealand's highly educated population and on the abundant natural resources such as timber, pulp and electric power. Heavy industry is capable of large scale production and rapid expansion if the industry is built up for the export market. Only in this way can labor and capital be transferred from the inefficient consumer goods light industries into efficient heavy industry sector and an efficient reallocation of resources achieved. And only in this way can the expansion of horizontal trade in industrial product be accomplished in accordance with recent trends in the flow of international trade.

The reorientation of the New Zealand industry toward greater competition requires an economically efficient use of resources to isolate those products which can be manufactured at competitive costs and which make use of those factors in which New Zealand has a comparative advantage. To the extent that the price mechanism of resource allocation is defunct, a well defined criterion should be established by the government for priorities of development in order to encourage those activities which would lead

to the establishment of competitive industries in the future. The existence of a comprehensive system of quantitative restrictions on imports and expansionary government spending have created a strong demand for all domestic resources. With fully employed resources, expansion in a particular industry takes place by the diversion of resources from their current employment, and it is desirable that resource allocation be undertaken on the basis of some objective criteria. One way to rank the various economic activities can be by the criterion of domestic costs of foreign exchange saved by imports substitution or earned by exports, on a net basis. This concept can be stated as follows: if by producing commodity "a" the economy can save or earn one unit of foreign exchange at a lower cost of New Zealand dollars than by producing commodity "b", then more resources should be drawn into the production of commodity "a". (For fuller details see (2)). Here is a hypothetical example to illustrate the use of the criterion. If an imported vehicle costs US$ 4,000 and if the cost of imported components amount to US$ 2,400 (producing the car in New Zealand), then the New Zealand economy can save US$ 1,600 in the domestic production of the car. Assuming the cost of domestic production (value added plus domestic intermediate inputs) is NZ$ 3,200, then each US dollar saved requires the use of domestic resources worth 2 New Zealand dollars (NZ$ 3,200/US$ 1,600). Thus, if an alternative use for resources can be found such as the production of paper for export or tourism, etc, at which a net US dollar earned in exports or saved by import replacement can be produced at a cost of, say, NZ$ 1.5, then the economy would clearly gain by the transfer of resources to such activities.

On the basis of such domestic cost criterion the government should give proper financial incentives, either by subsidies, tariffs or development loans, to encourage the expansion of manufacturing activities with lower costs per unit of foreign currency earned, consistent with the the balance of payments equilibrium. In this manner a higher degree of competition and a better functioning of the allocative property of price mechanism in New Zealand could be achieved. Consequently, the unfavorable effect of foreign trade variables which, as the model indicates, depress the aggregate income growth rate below the expected growth rate, could be eliminated and a higher rate of economic growth attained.

Measures to Improve the Flow of Autonomous Investment

The rate of growth of autonomous investment enters directly into the determination of the rate of aggregate income growth. Furthermore, a satisfactory flow of autonomous investment is needed to ensure that disturbances are largely absorbed so that economic growth is stable. Measures to improve the flow of autonomous investment in New Zealand should be focused upon external trade, economic planning and financial policies.

External markets

Since the whole economy depends to a very large extent upon export receipts, prospects of developments in overseas markets are highly important. There is therefore the need for the greatest possible expansion and diversification of existing markets for traditional products, the need for the development of new markets and new products, and the need of

encouragement of firms to enter the export trade. Attempts should also be made to integrate the production of New Zealand firms with that of larger international firms either by subcontracting or other means. Regardless of the outcome of present United Kingdom's efforts to join the EEC, New Zealand should intensify her trade relations with the Pacific region, in particular with Australia, Japan and the United States.

There should be closer cooperation in the future between New Zealand and Australia which will enable sufficient specialization of each in their respective fields of comparative advantage. Closer economic cooperation will benefit both countries. Freer access to a relatively close and natural market can help New Zealand to overcome some of the handicaps of its small size market. In turn, Australia will benefit from freer trade with New Zealand which is Australia's largest single external market for its manufacturing exports.

There is great room for the expansion of markets in Japan. When the Japanese income doubling plan is realized in 1970 (29), wool and dairy product imports are likely to increase since there is a rapid flow of Japanese agricultural labor into industry and a consequent rising consumption standard. Japan's trade with New Zealand has been a vertical exchange of manufactured goods for primary products. But there are limitations to the expansion of this. The main emphasis of growth therefore should be on the potential in the field of science-based industries, including heavy industry. International specialization should be by mutual agreement through collaboration of firms and capital. In these interests it might be well to establish a preferential tariff system, including

Australia. There should be joint ventures for the processing of wool, butter and cheese in South East Asia. These industries in New Zealand and Australia are hampered by high wages. By moving into Asia the cheap local labor could be utilized, products could be designed for local tastes and demand could be stimulated.

Exports of agricultural commodities, such as beef and lamb to the United States should be processed in forms which can be marketed at higher prices. This requires more imaginative packaging, presentation and promotion. Efforts to penetrate the United States market, however, have been harmed by recent protectionist restrictions.

The strengthening of international trade relations must be based on effective trade and marketing analysis, and trade representation in other countries. Trade analysis should evaluate long- and short-terms prospects for the major export commodities and gather market intelligence concerning areas of possible export opportunities. Trade representation should include effective dissemination of information on New Zealand products. The technical ability and the marketing outlets which appropriate overseas participation can offer, are essential factors in a reorientation toward export markets or in the exposure to competition with imports.

Economic planning

To the extent that effective resource allocation in New Zealand is distorted and that decision making is divorced from incentives, faith in the economy's future and hence the flow of autonomous investment depends

also to a large degree upon economic planning as a proper guide on fields of general economic policy and development.

Economic planning should be based on expert and systematic analysis of the complex and serious economic problems the country is facing. These would include the persistent balance of payments deficit and the reorientation of the industrial structure. As planning broadens it should become more consistent. In planning an efficient allocation of resources towards the reorientation of industrial policy it is essential that a broad integrated picture of the economy over a reasonable period ahead is established so that the necessary contributions by individual sectors to national growth and their consequent demands can be more clearly assessed and provided for.

In an economy such as New Zealand's with its marked dependence on export income, economic conditions can change rapidly. For that reason it is essential to have procedures for a continuous evaluation of economic developments and of the effects of any policy measures, so that any desirable adjustments can quickly be made. The economic plan will have to be frequently revised. Even if more is known about the structure and the operation of the New Zealand economy, forecasts are bound to be disrupted by changing technology, by changing political and economic circumstances overseas, even by changes in the weather which can not be foreseen. The plan should be therefore cast in a dynamic framework, since it is actually the availability and continuous use of professional economic advice, rather than a formal plan which is the essence of effective planning.

The strengthening of economic planning does not necessarily have to

increase the government's role in economic affairs. On the contrary. Improvement of New Zealand's economic structure should result in more reliance on general policies and guidelines, rather than the present practice of detailed licensing which necessarily involves government intervention in the investments and production of individual firms.

The lack of adequate long term trade analysis has been one of the most serious shortcomings in policy planning in New Zealand. This has resulted in major difficulties in forecasting future trends in New Zealand's export commodities, and has involved the danger of basing policy suggestions on very uncertain forecasts. There is thus a need of a greatly improved market research with respect to all export commodities, a need for more concerted future efforts to improve projection techniques and to work out policy suggestions, in order to give the government and the marketing boards an instrument for systematic analysis of trends in export commodities and for advice on marketing and trade policy.

The present incomplete nature of statistical data handicaps any attempt to center attention upon realistic relationships among strategic variables. There is thus a need for improvement on the accuracy and the scope of economic data in New Zealand, which implies that greater attention should be devoted to economic research than has been the case in the past.

Increasing support to economic and other research institutes and the strengthening of training facilities in these areas together with efforts to encourage the development of a more competitive industrial system should also help to mitigate the problem of brain drain. This problem, which

affects not only economists and statisticians but also other scientists in New Zealand, is partly due to the lack of attractive economic opportunities in the country.

Financial System and Monetary and Fiscal Policies

The list of measures to improve the flow of autonomous investment in New Zealand must also include measures to improve the working of the financial system, and to increase the efficiency of monetary and fiscal policies. The proper functioning of the financial system permits the government and the private sector to mobilize and to allocate surplus funds and to carry out a higher rate of capital investment than would be possible from revenue sources alone. It is therefore clear that if the financial system fails to fulfill its functions or performs them only imperfectly the result will be to deter some economic activities from taking place which will manifest itself in a slower rate of economic growth. Financial institutions and markets are also the vehicle for transmitting the main impact of financial policy and if they do not adequately reflect the changed at-

process of economic development in order to meet the needs of an evolving and growing society. The rapidity with which the change is taking place is the source of difficult problems of credit control in New Zealand. As a consequence, credit controls on some forms of credit are becoming less and less effective, because the financial system has rapidly developed alternative forms or sources of credit (30). Credit control in New Zealand, therefore, must be widespread and pervasive.

Among the measures to increase the effectiveness of the financial system in New Zealand should be the improvement of the facilities available to borrowers and lenders. These measures should make the capital market more competitive, improve the mobility of funds. The increased efficiency in mobilizing savings and allocating funds in turn should make an effective contribution to stimulating economic growth and productivity. In implementing these measures the government should give deliberate and active encouragement to innovation, enterprise and competition which are as essential in the financial system as in the manufacturing or agriculture sector of the economy.

Accurate and detailed statistics are necessary as a guide for government and business decisions and as a means of informing the general public on financial matters. Although New Zealand has a considerable range of financial statistics there is a number of important deficiencies (30), which should be corrected. In general, there should be more research in order to increase the store of theoretical and factual knowledge about the workings of the system and its response to particular policy measures.

Fiscal and monetary policies by which the government seeks to influence

the level of expenditure in the economy to achieve desired economic and social objectives should be relevant not only to the situation at hand, but also to the general economic background. For reasons already explained, the governments in New Zealand have been reluctant to exercise restraint in spending in times of high export receipts thus giving rise to problems of inflation. Since the foreign trade sector of the New Zealand economy forms a high portion on national income, the supply of money is very strongly affected by changes in the balance of payments. Because of the fluctuations that are possible it is clear that the economy is very difficult to control by monetary measures alone. Therefore, while the effectiveness of monetary policy in New Zealand can be improved, monetary policy alone can not play a major role in steering the country's economy. Consequently, the government will achieve a noticeable influence over the volume and direction of national expenditure only if it is prepared to exert much firmer control over its own expenditures and to use variations in rates of taxation as a means of influencing private sector expenditure. The speed and operation of fiscal measures are likely to be much greater because they have a direct and immediate effect on current expenditure. Moreover, they can be more discriminating in their effect. For these reasons, monetary policy in New Zealand can be a useful and effective instrument of control only in close association with appropriate fiscal policies. In general, there should be more experimentation to evolve monetary and fiscal measures best suited to the structure of the New Zealand economy.

Since the policy instruments in New Zealand have seldom been formulated with the degree of clarity and explicitness required, an attempt should be made to give the monetary authorities clear and operational objectives expressed as far as possible in quantitative terms.

SUMMARY AND CONCLUSION

New Zealand's natural resource endowment is characterized by lack of significant mineral and oil deposits and relative abundance of natural grasslands and a mild climate. The economic development and growth of the country have been determined by the demands of industrial Britain, the center of the economic force configuration in the 19th century. As a result, New Zealand has a highly efficient, export oriented agricultural sector based on advanced technology and research. The major feature of the industrial sector, however, is its orientation toward domestic market. The domestic market orientation is mainly the result of quantitative restrictions on imports, which have been maintained for balance of payments reasons and have sheltered local industries from international competition. Under such protection most industries operate on small scale and at high costs. In terms of value added, domestic production costs sometime exceed international costs by 100 per cent or more. The inefficient state of the industrial sector implies misallocation of resources, and is directly responsible for reoccurring periods of large deficits on current account.

New Zealand is a high income country overdependent on international trade on a small number of primary commodities. Dependence on trade is characterized by a high ratio of exports and imports to gross domestic product. This ratio has amounted to nearly 24 per cent in recent years. Furthermore, over 90 per cent of the total value of exports is still derived from wool, meat and dairy products. New Zealand's largest export market is the United Kingdom which buys about two thirds of New Zealand's

total exports. Dependence on the British market is even higher for exports of lamb, butter and cheese.

The institutional arrangements have encouraged preference for maintaining stability and the status quo over rapid progress. Per capita income is high (NZ$ 1,442 in 1967), distribution of income is equalized, there exist thoroughgoing welfare regulations and the government controls directly a large part of the economy. New Zealand is a welfare state with a high standard of living which has led to a disregard for efficiency (except agriculture) and lack of vigorous entrepreneurial spirit.

The changing pattern of world trade has not been favorable to New Zealand. The tendency has been from vertical exchange between primary and manufactured goods to horizontal trade in manufactures. Furthermore, dissolution of the British Empire and the consequent weakening of Britain, New Zealand's most important trade partner, have led to changes in British agricultural policy which are viewed with great concern by New Zealand. Very significant issues for New Zealand's political and economic development have been raised by Britain's decision and attempts to join the European Common Market. As a result, New Zealand is now facing serious problems of economic transformation and adjustment in response to changes in world trade and political power structure.

Capacity to transform means to adopt the present economic structure to a new situation in an economic manner. This implies a plan, a strategy for development, so that a stable and satisfactory rate of aggregate income

growth can be maintained and other desirable economic objectives achieved. In order to plan for the future an understanding of the structure and the underlying characteristics of the economy is required. A simple econometric model was built for this purpose.

The size of the estimated parameters and experiments performed with them depict the economy as inherently stable. The bulk of investment is autonomous and shows a significant upward trend. The accelerator is small (.41), so that individual disturbances in the rate of aggregate income growth result in damped oscillations about its progressive equilibrium. What inclination there is for aggregate income to fluctuate is probably primarily due to the behavior of inventory rather than fixed capital investment.

While individual disturbances tend to fade out rather quickly, the summary impact of continuous exogenous shocks impinging upon the system is large enough to keep the inherently damped cycles alive. These do combine in periods of growth above or below the model's equilibrium rate of growth. On the average, the observed rate of growth has been lower than the computed rate of growth. This is mainly due to the unbalanced behavior of exogenous foreign trade variables. The terms of trade effect has been the most depressing one, reflecting the basic weakness of New Zealand's overdependence on export receipts of a small number of primary commodities. The rate of growth of aggregate income could be markedly increased if it was possible to balance out the impact of exogenous variables to a greater extent.

Stability and a satisfactory rate of economic growth can be maintained only as long as an adequate flow of autonomous investment is maintained, that is, as long as the bulk of investment depends upon expectations of future income rather than upon past changes in income. This being the case, the accelerator will remain small and the effect on investment of a short-run divergence of aggregate income from its progressive equilibrium will not be cumulative. There may be some modifications of long-run investment plans, but only to a small degree as the basic expectations on which these plans are based are not greatly affected. Adjustments will be mostly in inventories. If, however, businessmen revise their expectations downward to a greater degree, investment may fall rather steeply in accordance with the incremental capital-output ratio which is larger than the accelerator. The precipitous fall in investment may clearly have very disastrous effects on the growth rate of income, output and employment.

The model predicts an equilibrium rate of aggregate income growth of $140 million per year. In relative terms this amounts to about 5.8 per cent. The actual rate of growth for the sample period has been smaller and averaged to about $105 million or 4.3 per cent in relative terms. In order to close this gap and to strengthen the economy's capacity to transform in a stable manner, following measures should be adopted:

1) Domestic industries should be gradually exposed to international competition. Reorientation of industry toward greater efficiency would diversify and strengthen New Zealand's economic base and lessen its dependence on a narrow range of primary exports. The reorientation of the industry should be on a selective basis using some such objective criteria

such as the concept of domestic costs of forcing exchange saved by import substitution or earned by exports.

2) Maximum efforts should be made to expand and diversify existing markets and to develop new markets and products. Emphasis should be given to the Pacific area and closer cooperation with Australia and Japan. There is a need to improve long term trade analysis and market research.

3) Economic planning should be more comprehensive and should be cast in a more dynamic framework. There is a need for more complete statistical data and research.

4) Measures should be taken to improve the functioning of the country's financial system. More emphasis should be given to fiscal, rather than monetary policy to guide the economy.

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